Blues 2006

User Manual

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Introduction

Blues 2006 is a fully featured .NET application. We took our Blues 2000 product and completely redesigned it to take full advantage of the Microsoft .NET architecture. Because it is a 100% managed .NET application, you get features like this:

- ClickOnce and No Touch deployment – Simply browse to the Blues installation folder and click on the link to install and run your emulation. No need to visit each PC to install your emulation.
- Secure Socket Layer (SSL and TLS) provide the highest encryption available today.
- Automatic Software upgrade - automatically done by the Microsoft Common Language runtime and Internet Explorer. Simply install the new version over the old one and the next time Blues is launched over the network it is automatically upgraded.
- Isolated Storage - Each users emulation settings are saved in the .NET isolated storage space so that each users preferences follow them around the network and remain safe.
- Security – Blues 2006 runs inside the .NET “sandbox” so there is complete control over what resources it may use. By limiting an applications permission set, you can be assured that it can’t jeopardize operating system stability or affect other installed software.
- Virus hardening – Each Blues file is electronically signed and checked by the Common Language Runtime when it is loaded into memory. This prevents a virus from being able to attach itself to Blues 2006 and thus hinders the spreading of the virus.

Blues 2006 provides an eloquent graphical unit interface for IBM 3270 and IBM 5250 terminal and printer emulation coupled with an administrative configuration tool that controls emulation settings on a per user bases. Blues 2006 is a Managed .NET application designed to run on Microsoft Windows 2000 or higher operating systems.

Connection to the foreign host is done over the TCP/IP protocol with TN3270, TN5250, and VT100 support. A variety of terminal and printer device types are supported.

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File transfer functionality includes IND$FILE to and from the CMS, VM, TSO, ROSCO, and CICS as well as FTP. Build batch files to easily transfer regularly transferred files easily.

Macro functionality lets you record sequences of screen activities and then assign them to keystrokes, toolbar buttons, or mouse clicks.

Installation

Installation is a two-phase procedure, initial and subsequent. Initial involves running the setup.exe program to copy the necessary files to a hard drive located on a stand-alone pc, network file share, or Microsoft Internet Information Server. Subsequent installation refers to networked pc installation, "ClickOnce Deployment", or "No Touch Deployment" and is only required for multiple pc installation and roll out. PCs that can access the folder or web site where the initial installation has been done can run their emulation by simply pointing Microsoft Internet Explorer to the folder, or by doing a Start/Run of the appropriate application, this will be referred to as "No Touch Deployment" throughout this manual. "ClickOnce Deployment" and "No Touch Deployment" are automatically cached and version maintained by the Microsoft Common Language Runtime.

Once the initial software installation has been done, the Blues Manager application must be used to customize your environment. This involves, creating a set of Blues user settings, each user setting contains one or more terminal and printer sessions that provide the emulation. This configuration information is kept in the Blues database. The Blues database contains the "Master" configuration and is managed by the Blues Manager application. When an operator saves their session settings from their emulation window, it is saved in their isolated storage (a special .NET location in their file system). Each time an operator launches their Blues emulation, the date and time of the users "master" configuration is checked to see if has been changed. If the master configuration has been changed, then the changes are merged with the settings in isolated storage. This allows the Manager application to override any settings that an operator may choose.

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A special Blues user named “Default” is created during the initial software installation and may be used for simple situations. More complex configurations may need to be done in larger environments.

One other concept that must be understood for “No Touch Deployment” is the .NET security model. Depending on where you launch Blues from, it will run under a different security zone. The three zones are: My Computer, Intranet, and Internet. Each security zone may be adjusted to allow a .NET application specific rights. Some of these rights include using TCP/IP, accessing the hard drive, printing, and accessing the registry. For Blues to run properly, it must be trusted in the various zone(s) being used. The Blues software comes with a separate Microsoft installer package called trustblues.msi that can be run to adjust the security for the Blues software, see “Adjusting .NET Security for Blues” for details on setting up security.

Initial Installation Procedure

Initial installation involves running the setup.exe program to copy the necessary files to a hard drive located on a stand-alone pc, network file share, or Microsoft Internet Information Server. If “ClickOnce Deployment” or “No Touch Deployment” are going to be used, then the Blues software must be copied to either a network file share or to a PC running Microsoft Internet Information Server. Software installation automatically detects if the Microsoft Internet Information Server is present on the PC and if it is, creates a virtual directory called Blues that users may browse to launch their emulation.

Upgrading from a Previous Version of Blues 2006

If you have a beta or trial version of Blues 2006 and you want to preserve your configuration, then you will need to install the new version in the same folder that it is in now. Follow these steps:

- The first thing to do is use the Blues Manager applications File/Backup feature to save your configuration (user sets, keyboard mappings, macros, etc). This will save your settings in a zip file. Write down the name of the folder where the software is installed. The default is Program Files\Blues.

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- Uninstall your old version by going to the Control Panel add/remove programs window and select Blues 2006 to uninstall.
- Follow the “initial Software Installation” instructions and make sure that the installation folder is set to the same folder where the old product was installed.
- After initial installation, use the Blues Managers File/Restore feature to restore all your settings from the backup zip file.

If you have installed other computers via the “No Touch Deployment” or the “ClickOnce Deployment”, then these computers will be automatically updated the next time they launch their emulation.

Upgrading from a Previous Version of Blues 2000

If you have a version of Blues 2000 and you want to preserve your configuration, then you will need to install the new version in the same folder that it is in now. Follow these steps:

- The first thing to do is use the Blues Manager applications File/Backup feature to save your configuration (user sets). This will save your database in a zip file. Write down the name of the folder where the software is installed. The default is Program Files\Blues.
- Start a terminal session window and edit the keyboard mapping from the settings menu. From this window you will see the folder that your keyboard mappings are in, write the name of the folder down.
- Uninstall your old version by going to the Control Panel add/remove programs window and select Blues 2000 to uninstall. **NOTE – when asked of you want to delete your Blues database answer YES and when asked to delete your blues private folder say NO.**
- Follow the “initial Software Installation” instructions and make sure that the installation folder is set to the same folder where the old product was installed.
- After initial installation, use the Blues Managers File/Restore feature to restore all your settings from the backup zip file.
- Copy all the files from the Blues 2000 private folder to the new installation folder.

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Initial Install Requirements

To be able to install and run Blues 2006, the following software components must be previously installed:

- Microsoft Windows 2000 or newer operating system.
- Microsoft Internet Information Server 4.5 or newer (only required if No Touch Deployment over Internet Explorer is going to be used).

Place the Blues 2006 CD in your drive and wait a few seconds. The installation program should automatically start.

If the installation program does not start, select Start from the task bar, then select Run and enter d:\ setup.exe, where d is the drive number of your CD ROM drive. Press the ENTER key and the installation program should be started.

Once the installation has been started, the following window will be displayed:

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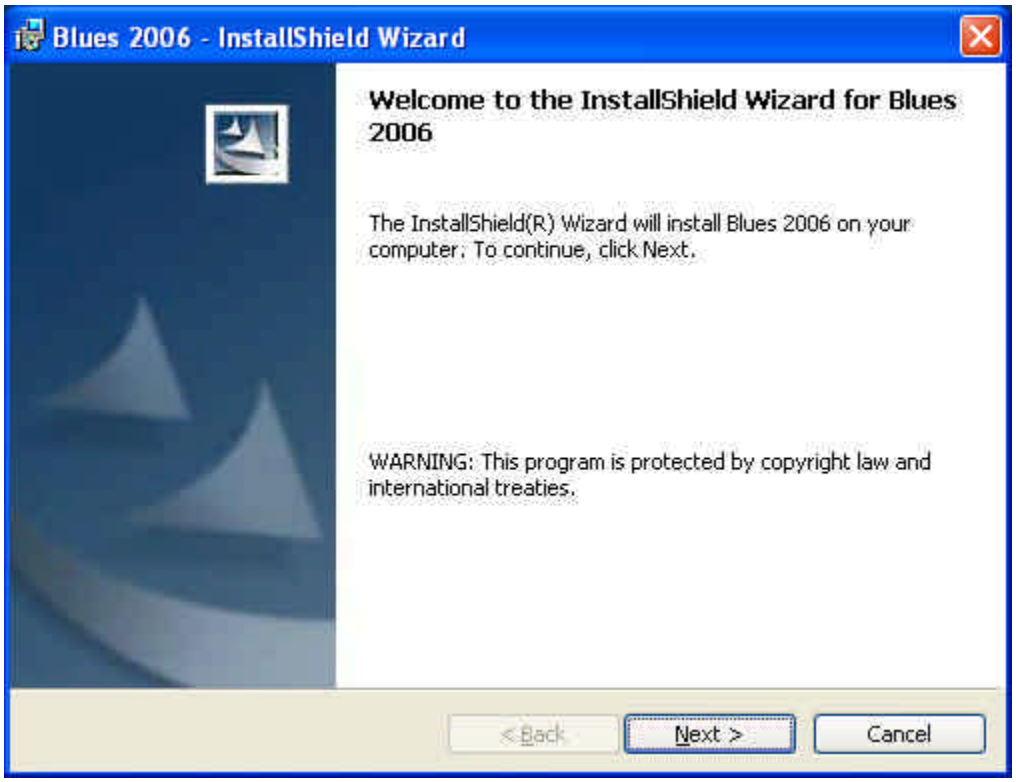
Blues 2006 - InstallShield Wizard
Welcome to the InstallShield Wizard for Blues 2006
The InstallShield(R) Wizard will install Blues 2006 on your computer. To continue, click Next.
WARNING: This program is protected by copyright law and international treaties.
< Back
Next >
Cancel

License Agreement

The next window displays the license agreement for Blues 2006. Please read the license agreement before continuing. After you have accepted the license agreement, press the next button.

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Blues 2006 - InstallShield Wizard
License Agreement
Please read the following license agreement carefully.
BLUES 2006
LICENSE AGREEMENT
GRANT OF LICENSE
NSI grants the user who has obtained a legitimate
license of the Software, the right to use one copy of
the enclosed NSI software (the "SOFTWARE") on a single
terminal connected to a single computer.
I accept the terms in the license agreement
I do not accept the terms in the license agreement
InstallShield
< Back
Next >
Cancel

Selecting User Information

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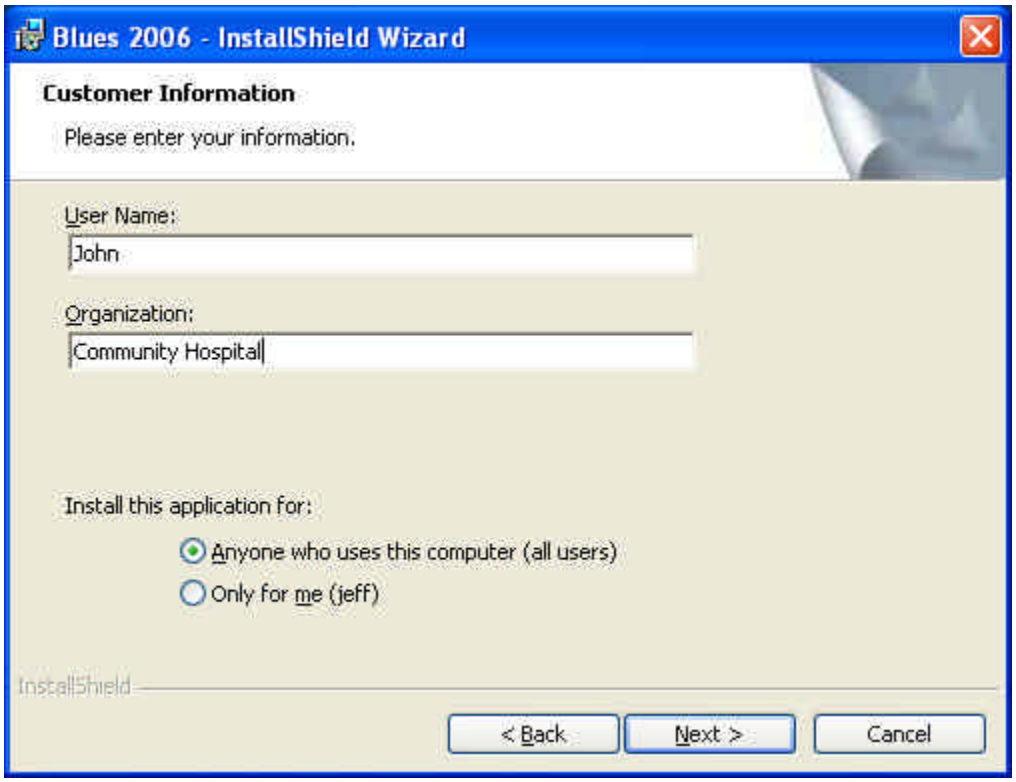

The Blues software may be installed for all users of the PC, or only for your self. You may install the software for all users of the PC, and then configure Blues uniquely. Each Windows user will be prompted for their unique settings when they try to use any of the Blues applications for the first time.

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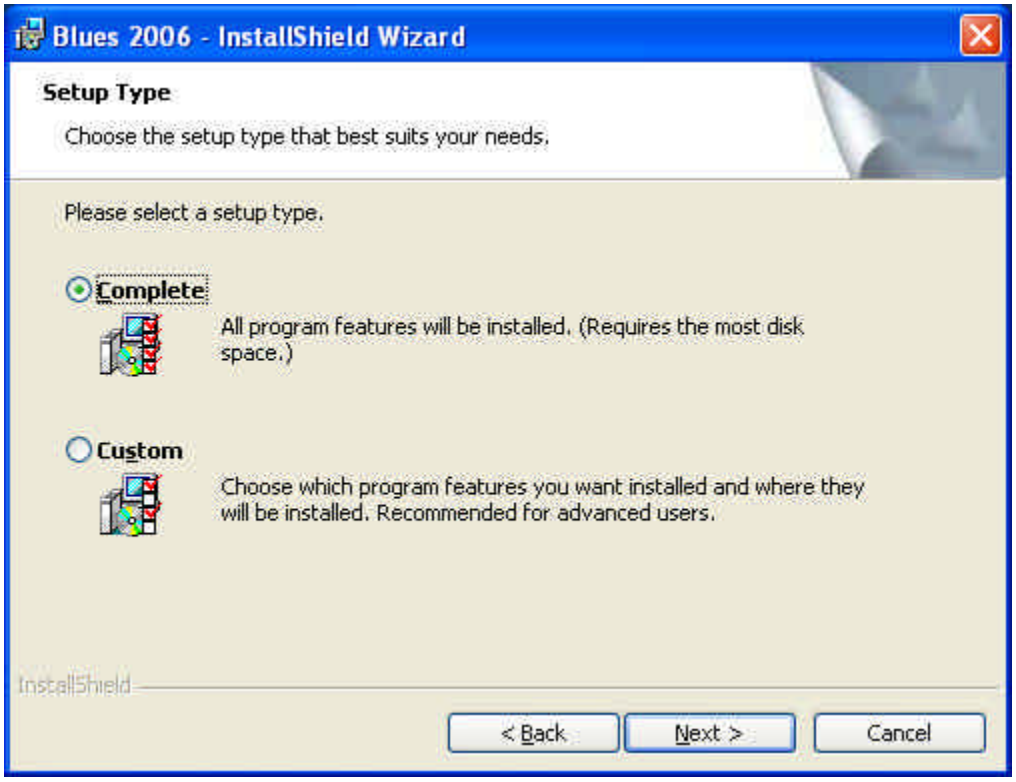
Installation Type


Blues 2006 - InstallShield Wizard
Setup Type
Choose the setup type that best suits your needs.
Please select a setup type.
Complete
All program features will be installed. (Requires the most disk space.)
Custom
Choose which program features you want installed and where they will be installed. Recommended for advanced users.
InstallShield
< Back
Next >
Cancel

There are two types of installation; Complete, and Custom. Complete will install all possible components. The Custom installation will allow you to select the folder where the Blues software will be installed.

The software suite will now be copied from the installation media to your computer. After the software has been copied, you be allowed to continue setting up Blues by pressing the Finish button. The next step is to use the Manager window to configure your emulation.

The first time Blues is launched after installation, the operator is prompted to enter the connection parameters. The connection parameters determine what type of emulation is to be used and the IP address of the host. For information on these parameters, see the section “Edit Destination” in this manual.

Adjusting .NET Security for Blues

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One other concept that must be understood for “No Touch Deployment” is the .NET security model. Depending on where you launch Blues from, it will run under a different security zone. The three zones are: My Computer, Intranet, and Internet. Each security zone may be adjusted to allow a .NET application specific rights. Some of these rights include using TCP/IP, accessing the hard drive, printing, and accessing the registry. For Blues to run properly, it must be trusted in the various zone(s) being used. The Blues software comes with a separate Microsoft installer package called trustblues.msi that can be run to adjust the security for the Blues software.

If any type of security exception occurs while using the Blues software, then the Blues software must be trusted.

Trusting Blues involves running the program trustblues.msi. This may be done by either performing a Start/Run from windows of the file trustblues.msi, or by clicking on the trust link of a user.htm file. The user.htm file contains a link to the trustblues.msi file. **Running the trustblues.msi file does not affect the trust level for any other .NET application, only the Blues trust level is adjusted.**

The security adjustment process does not accept any operator input and completes without any notification. The security adjustment only needs to be done once.

ClickOnce Deployment

ClickOnce deployment can only be performed after the initial software installation has been done. The best use of the ClickOnce technology can be obtained by first performing the initial software installation on a file server or web server, then installing subsequent workstations over the ClickOnce technology thus saving many man hours of installation, customization, and maintenance.

ClickOnce technology allows the Blues software to be installed on a computers hard drive by running the Blues application manifest file from either a network share or a web server. Once installed, a new shortcut is created under the Start/Programs/Newhart Systems menu. Each time the Blues software is launched from the menu, a version check is performed and if a new version exists on the file share or web server it is automatically installed and then

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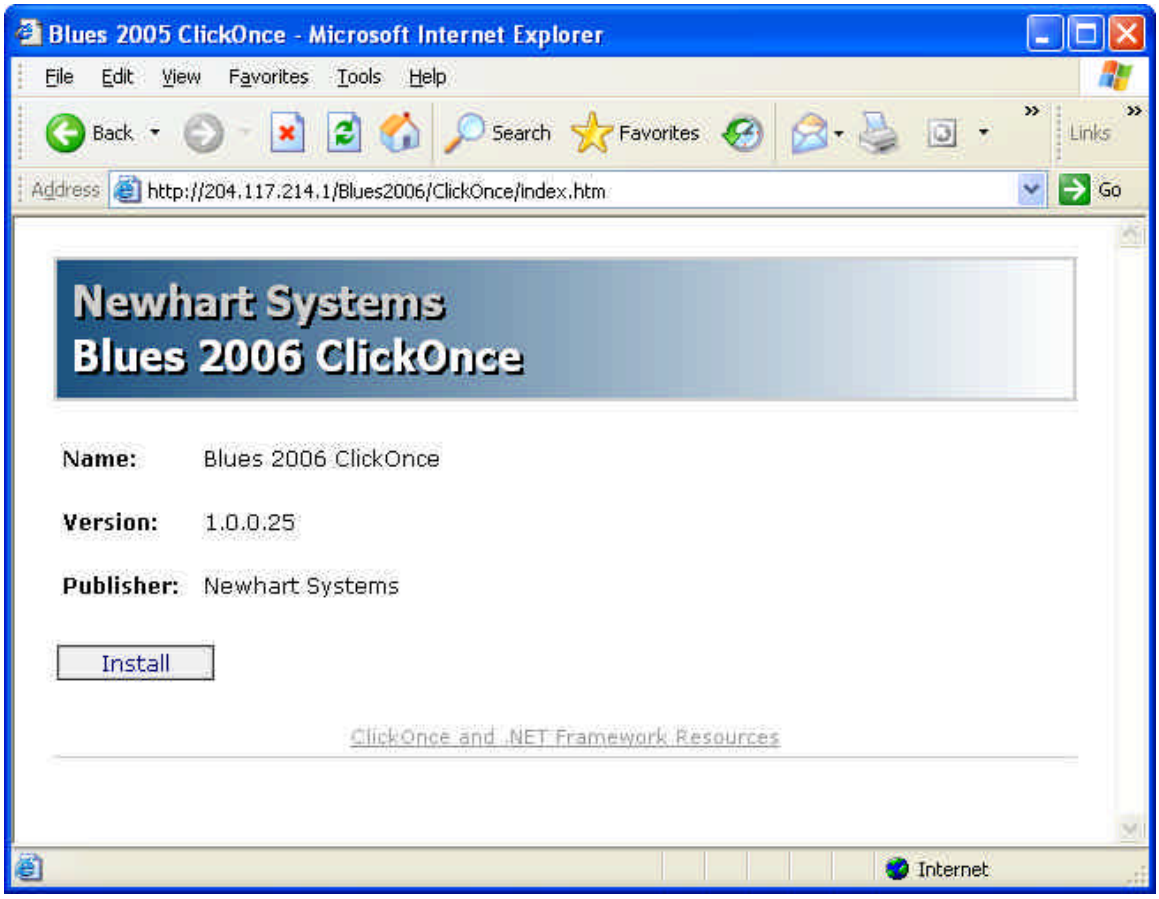
started. The ClickOnce technology allows the Blues software to be installed and the necessary run time privileges adjusted for the Blues software to allow it to run properly. Installation can be done without administrative privileges. ClickOnce can be performed from any file server or web server. For information on the ClickOnce technology see http://msdn.microsoft.com/clickonce.

The initial software installation creates a folder named ClickOnce under the installation folder. This folder contains an index.htm file that is a web page used to install the Blues over ClickOnce.



If the .NET framework is not installed on the computer doing the ClickOnce installation, then the index.htm web page will appear slightly different and contain a link to the Microsoft web site to install the framework. After the framework has been installed, then the Blues software may be installed over ClickOnce.

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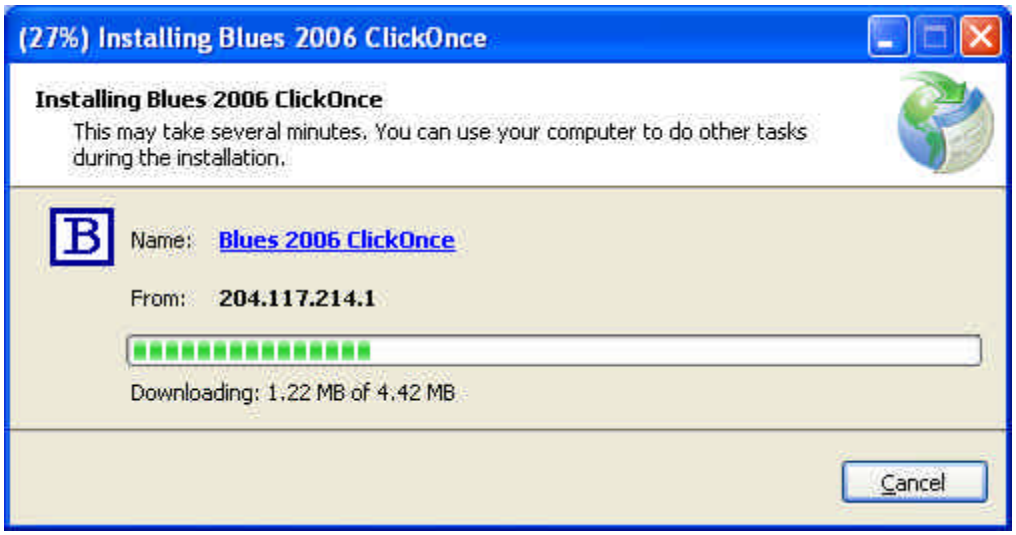
When the “Install” button is pressed, the Blues application manifest file is executed. This causes the Blues software to be copied from the server to the local hard drive, a new shortcut created and the Blues software executed. Depending on the browser security settings, a window may popup confirming that you want to install the software from Newhart Systems, press the Install button if this occurs.

Application Install - Security Warning
Do you want to install this application?
Name: Blues 2006 ClickOnce
From: 204.117.214.1
Publisher: Newhart Systems Incorporated
Install
Don't Install
While applications from the Internet can be useful, they can potentially harm your computer. If you do not trust the source, do not install this software. More Information...

While the software installation is in progress a progress window is displayed as follows:


(27%) Installing Blues 2006 ClickOnce
Installing Blues 2006 ClickOnce
This may take several minutes. You can use your computer to do other tasks during the installation.
Name: Blues 2006 ClickOnce
From: 204.117.214.1
Downloading: 1.22 MB of 4.42 MB
Cancel

After installation, the emulation is automatically launched.

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ClickOnce Database Location

The Blues database contains the necessary configuration information for the Blues software, as discussed earlier in this document. When the Blues ClickOnce application is launched, if no DATABASE command line argument is specified, then the software sniffs around the server that was used to install it looking for a Blues database, if it finds one, it uses this database to configure itself. If no database is found on the server, then a new one is created in the same folder that the software has been installed in on the local hard drive. This technique allows for a centralized database configuration if a database exists on the web server in the original server path. For example if the Blues ClickOnce application was installed from the web page http://1.2.3.4/Blues2006/ClickOnce/index.htm, then if a database exists in either the Blues2006 or ClickOnce folders on the server then it is used. Otherwise a new one is created on the local hard drive, the first time the software is launched.

No Touch Deployment

"No Touch Deployment" allows a user to run their emulation by simply pointing Microsoft Internet Explorer to the Blues folder/web site, or by doing a Start/Run of the Blues.exe application. "No Touch Deployment" does not involve the traditional install process and is sometimes referred to as "Smart Client" installation. "No Touch Deployment" automatically caches the Blues software. The Microsoft Common Language Runtime automatically maintains version checking.

The idea is to use the Blues Manager application to create the necessary configuration for your enterprise, then, have each user Browse to the Blues folder or web site and launch the Blues.exe application. Blues can be located on a local hard drive, a file share point, or on a Microsoft Internet Information Server. Blues is then administered from the Blues Manager application.

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No Touch Deployment Requirements

To be able to run Blues 2006 from a web site or a network share point, the following software components must be installed prior to launching Blues 2006:

- Microsoft Windows 2000 or newer operating system.
- Microsoft Internet Explorer 6.0 or newer.

IIS Configuration for No Touch Deployment

If the initial software installation was done on a computer running Microsoft Internet Information Server, then a default configuration was added to the Internet Information Server configuration. This default configuration consists of two virtual directories that are used in No Touch deployment. No additional configuration is required unless specific network requirements exist. These two virtual directories are named “Blues2006” and “Blues2006dir”. **Changing configuration settings for these two directories may result in a No Touch Deployment failure.** Several IIS options must be set properly to allow No Touch Deployment.

The Blues2006dir directory is used to discover the names of files on the web site. The Blues2006dir directory must have **Directory Browsing** and **Read rights** enabled. In addition the Blues2006dir directory must have the **Enable Default Document** turned off.

The Blues2006 directory is used to launch the software from. The Blues2006 directory must have the following directory settings:

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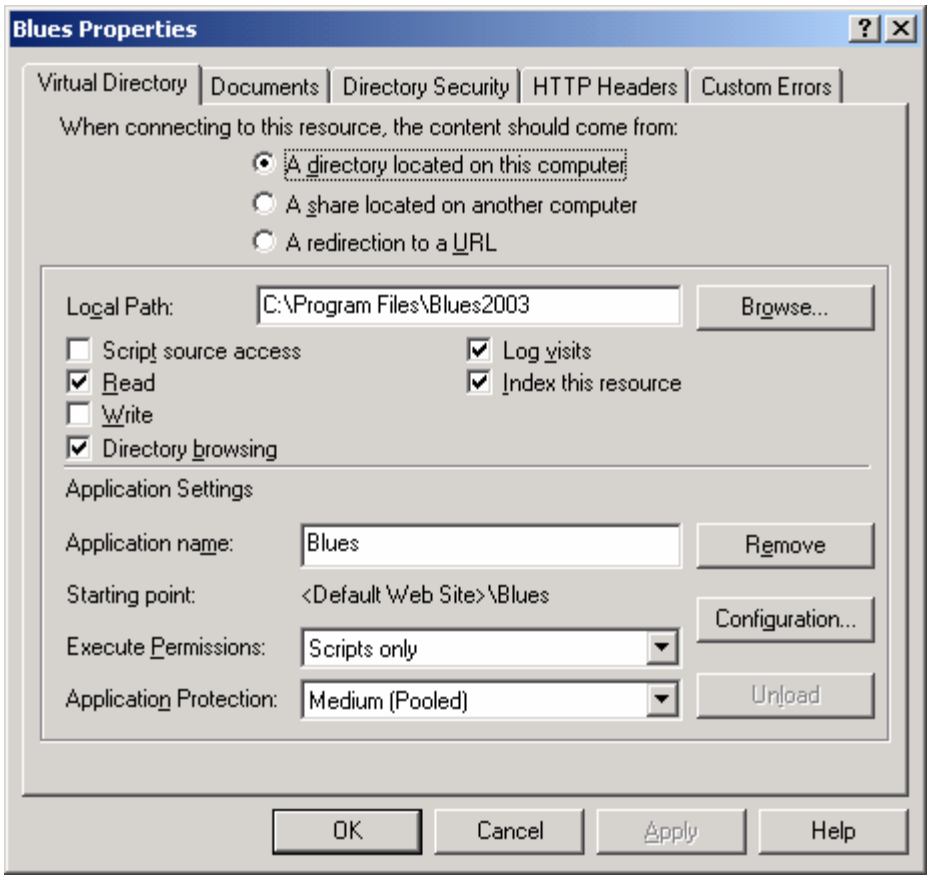

In addition, MIME types for .ini, .kbd, .pro, .key, .mac, .xfr, .xlt, .scm, .pfl, and .lu1 must all be set to “application/octet-stream”.

No Touch Deployment Operation

To install or run Blues via “No Touch Deployment”, simply browse to the file share or web site that the initial installation was done on. For example: if you installed Blues on a server running the Microsoft Internet Information Server (IIS), then browse to http://website\blues\user.htm (where website is the ip address of the IIS server). The following web page will be displayed

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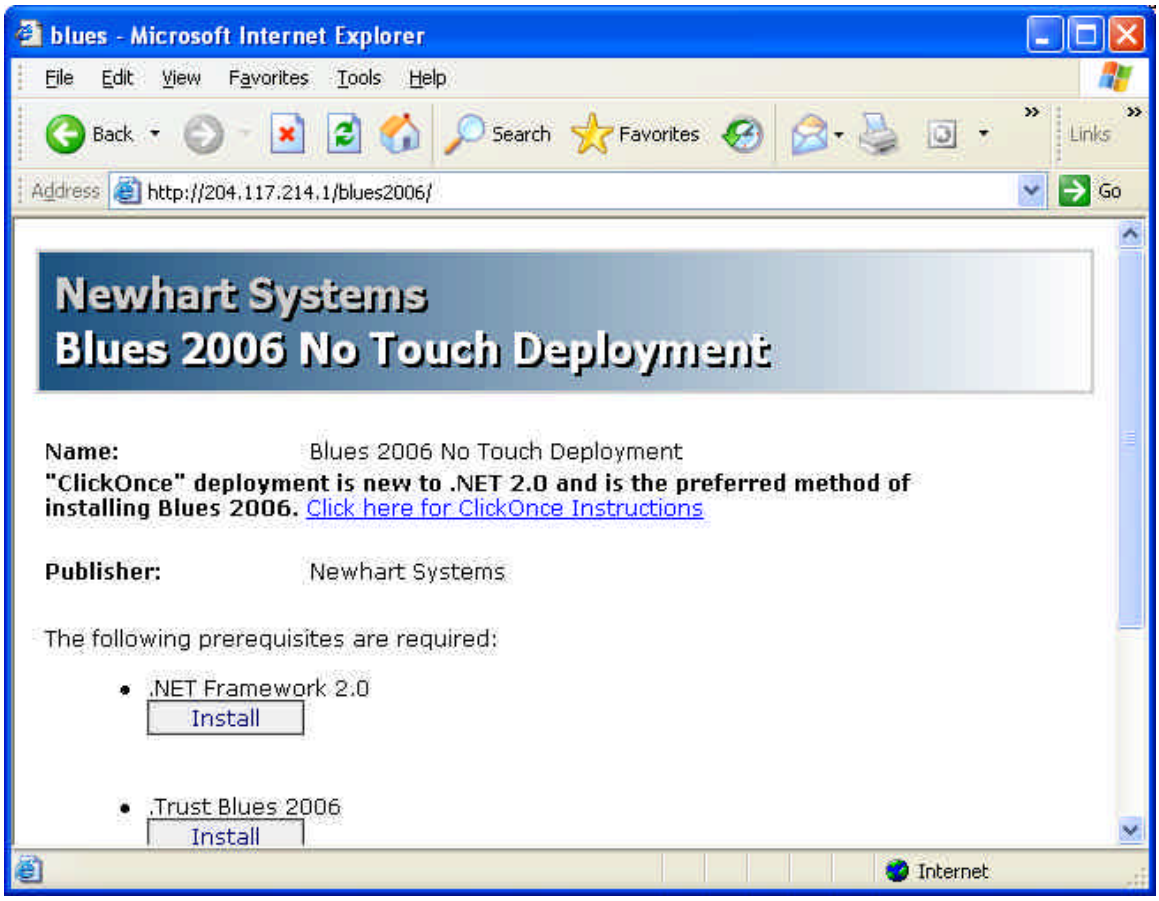
blues - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Back Search Favorites Links
Address http://204.117.214.1/blues2006/
Go
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Blues 2006 No Touch Deployment
Name: Blues 2006 No Touch Deployment
"ClickOnce" deployment is new to .NET 2.0 and is the preferred method of installing Blues 2006. Click here for ClickOnce Instructions
Publisher: Newhart Systems
The following prerequisites are required:
.NET Framework 2.0
Install
.Trust Blues 2006
Install
Internet

Depending on what operating system software is already installed on your computer and the trust level already set for Blues, you may have to (a) install the Microsoft Common Language Runtime, or (b) run the trustblues.msi program to fully trust the Blues software. If your not sure if either of these are installed on you computer, then go to the Control Panel add/remove programs window and see if both of these programs are listed, if they are not, then click on the appropriate link and install them. **The Common Language Runtime is a prerequisite for the trustblues.msi program.** In a large network roll out of Blues, the system administrator may be responsible for having these two components installed on each PC. Microsoft and other third party vendors offer solutions for installing these types of products from central locations.

Once you're satisfied the two conditions above, then click the mouse on the "click here" link to start your emulation. When the emulation is launched, a new shortcut may be added to the desktop and or the Start program menu.

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Uninstalling

To uninstall a “No Touch Deployed” computer, all that is needed is to delete any shortcuts and remove the Blues trust. Shortcuts can be removed by right clicking over them and selecting delete.

The Blues software and the Blues trust may be removed from the Control Panel “Add/Remove Programs” icon. To properly remove the software you should have administrative privileges and have all other windows closed. The uninstall wizard will guide you through removing Blues from a PC.

Note – Removing the Blues software will also deactivate any “No Touch Deployed” computers that share the software folder. If you want to maintain a copy of the configuration files, then use the Blues Manager File/Backup function to make a copy of your current configuration files.

Graphical User Interface

The Blues software provides a robust graphical user interface (GUI). Two interfaces are included in the software, a single document interface (SDI) and a multi document interface (MDI). The SDI interface provides a separate windows application for each terminal or printer session. The MDI interface provides a single window for all configured sessions; it has a “tabbed” dialog type of appearance that allows switching between sessions with the mouse. Each configured Blues user set may be configured from the Manager application to appear as either SDI or MDI.

The Blues software contains four .NET Windows applications; Manager.exe, Terminal.exe, Printer.exe, and Blues.exe. Each application can be optionally started with command line arguments (see command line arguments later in this section).

Manager.exe is SDI version of the Blues Manager application and provides the customization and configuration of the product.

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Terminal.exe is the SDI version of the terminal session. It provides the terminal emulation and file transfer functionality.

Printer.exe is the SDI version of the printer session. It provides the printer emulation functionality. The printer emulation connects to the midrange or mainframe host and emulates an IBM terminal device on one side and connects to any standard Windows printer or disk file on the other. When data is printed to the emulated printer on the host, it is routed to the printer session over TCP/IP and printed on your local or networked Windows printer.

Blues.exe is the MDI version of Blues. It provides the GUI for multiple terminal and printer sessions as well as a manager window in the same Windows application window.

Each menu item of a terminal and printer session may be optionally locked or removed (see section describing the Manager Application). When a menu item is locked, the operator may not change that particular feature, thus locking the setting of that particular feature. When a particular menu item is removed, the operator will not even see it. Complete menus may also be removed. For example, the complete Macro menu may be removed so that the operator has no macro functionality unless a macro has been assigned to a toolbar button, mouse click, or keystroke.

Launching Emulation

Emulation is ultimately launched by the Blues.exe application.

Once Blues.exe has been run once, a new shortcut will appear on the users desktop and or Start menu for subsequent launching of the product. **If Blues.exe is started without any command line arguments, then it will query the Blues database looking for the currently signed on Windows user to see if that user has a Blues configuration set, if so it launches that configuration set. If the Windows user name is not configured in the Blues database, then a search is done for the machine name and it is used if it is found.** If neither the Windows user nor the machine name is not found in the Blues database, then either the “Default” user configuration set will be used, or emulation will fail and an email message will be sent to an administrator notifying them of the configuration problem.

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If "No Touch Deployment" was used, then a shortcut was created on the users desktop and or Start menu.

Once the shortcut has been added to the computer users desktop, launching the product is done by double clicking on the Blues desktop shortcut or selecting Blues from the Start menu.

Command Line Arguments

All four of the applications take the same command line arguments. Usually it is not necessary to include any command line arguments as each Blues user may be configured for the arguments. Arguments are only provided to override the current value of the option defined by the Manager application. Each argument takes the form "Name Value", where Name is the name of an option and the value follows with a space character separating them.

DATABASE – The DATABASE option defines where the Blues configuration information is stored. The default value for this option is the same location that the application was started from. This option may be either a valid folder/share point, or a url on a web server. Example: "Terminal.exe DATABASE http://myweb/Blues"

USERNAME – Optional user name from the set of possible Blues user names. If no USERNAME option is used, then the Blues database is queried to see if the Windows user is configured in Blues, if so that is the configuration that is used, otherwise a user name of "Default" is used. Example: "Blues.exe USERNAME Fred"

SESSION – Session number to run. When a Blues user set is configured from the Manager application, each configured session is given a number from one up to the last session configured. This option determines which session to run. Example: "Terminal.exe SESSION 2"

LANGUAGE - Currently the Blues software can provide a graphic user interface in two languages, English and German. The default is English. The possible values for these languages are "US" and "GERMAN". Example "Terminal.exe LANGUAGE GERMAN"

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The Manager Application

The Manager application is used to configure the Blues software. This involves, creating a set of Blues user settings. Each user setting contains one or more terminal and printer sessions that provide the emulation. This configuration information is kept in the Blues database. The Blues database contains the "Master" configuration and is managed by the Blues Manager application. When an operator saves their session settings from their emulation window, it is saved in their isolated storage (a special .NET location in their file system). Each time an operator launches their Blues emulation, the date and time of the users "master" configuration is checked to see if it has been changed. If it has been changed, then the changes are merged with the isolated storage version to provide the correct set of settings. This allows the Manager application to override any settings that an operator may choose.

Each Blues user may be given administrative privileges to use the Manager application. Without this privilege, an operator may not use the Manager application.

Some of the capabilities of the manager application include defining how many emulation sessions each user has, what functionality each session offers the user, backup of configuration files into a zip file, restoring configuration files from a zip file, and maintaining the set of configured users and groups of users. Many Windows users may share the same Blues user set, or each Windows user can have their own unique configuration.

The Manager application may be launched in a separate window (manager.exe), or appear within the multiple document interface application (Blues.exe, or user.exe).

Using The Manager Window

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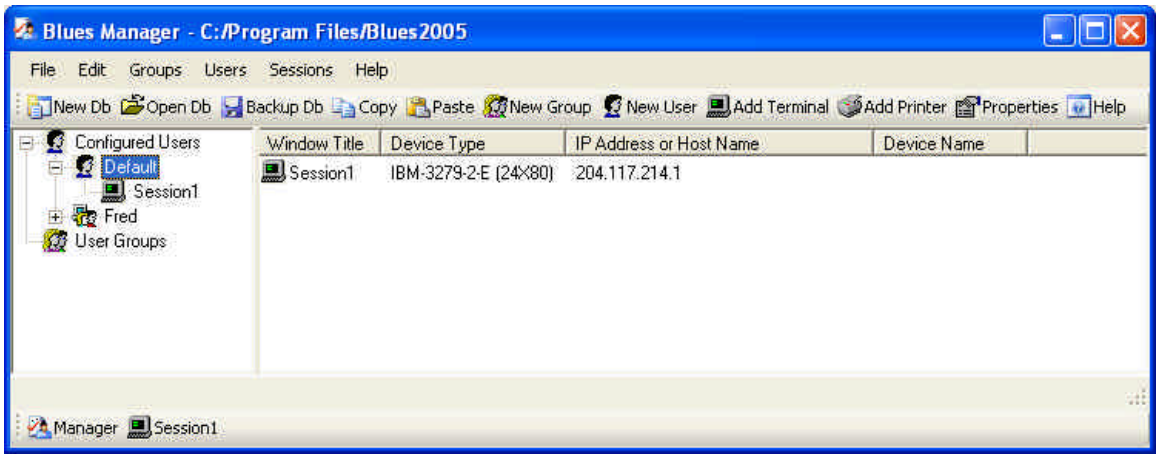

The Manager window contains a menu bar that lets you perform such functions as adding a user to the BLUES database, deleting a user and so on. Directly under the menu bar is the tool bar. The tool bar lets you perform menu item functions with the mouse. Under the tool bar are 2 window panes that me be split in two by dragging the mouse over the splitter bar. The left most pane contains a list of all configured users and user groups. The right most pane may contain a list of the sessions configured groups, or configured users, depending on what has been selected in the left window pane. And finally there is an area on the bottom of the window that contains a line of help text. The help text will display what a specific menu item or tool will perform. To display a tool's help line you need to position the mouse over the tool and the help line will appear. To display the help line for a menu item you need to drop down the menu item and highlight it with either the mouse or from the keyboard.

Whenever you select an item in the left pane, the right pane displays information about that specific item.

File

The file menu is used to open, close, backup, and restore the DATABASE. In addition the Manager is closed from the File menu. The following sections describe what each menu item performs.

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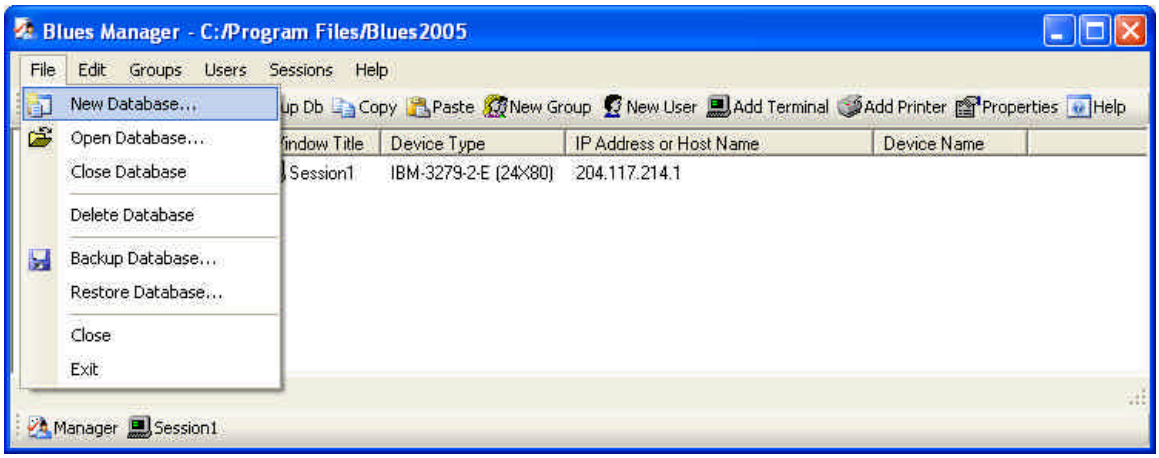

New Database…

This menu item will allow the creation of a new BLUES database. The name of the folder where the database will reside will have to be selected. New folders may be created from the same window that is used to select the folder. After the DATABASE has been created, new users may be configured.

Open Database…

This option lets you open an existing BLUES database. After the database has been opened, you may modify it.

Close Database

This option will close the BLUES database that is currently opened. After the database has been closed users may not be configured until either a new database is created or an existing database is opened.

Delete Database

Warning - this option will delete the currently opened BLUES database. All configured users, configured user groups, and their associated configurations will be deleted. After a database has been deleted, a new or existing database will have to be opened before users may configured.

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Before deleting the BLUES database, you may want to backup the database for future reference. This is done from the File menu “Backup Database…” and described in the following sections.

Backup Database…

This option will save the BLUES database. The BLUES database is compressed into a single ZIP compatible file. The database should be periodically saved to avoid loosing the BLUES database in the case of disk corruption.

Restore Database…

The restore database option will take an existing file created through the use of the backup database function and restore it. After the database has been restored, it will automatically be opened.

Close

This menu item is used to stop the Manager and return to the program manager.

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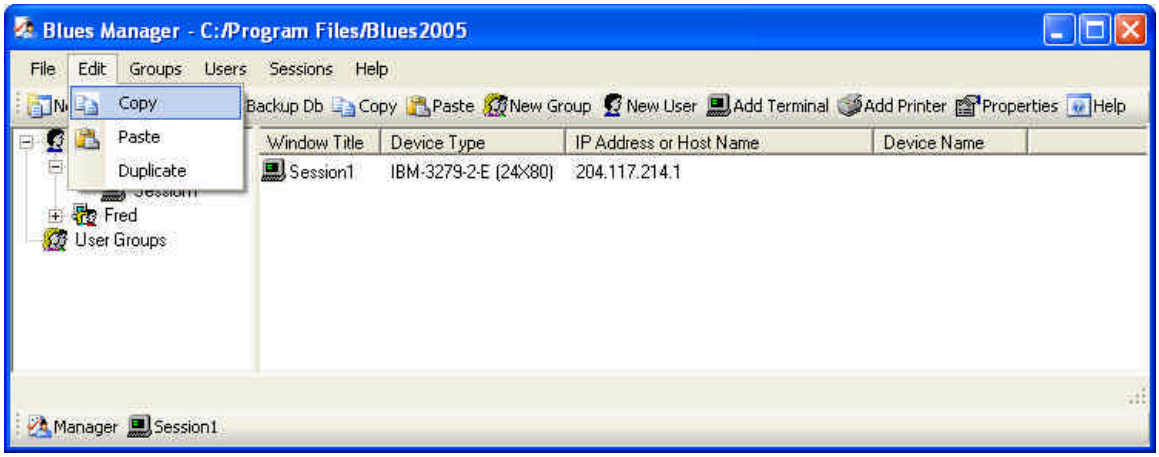
Edit



The edit menu makes it easy to duplicate existing configured users. A configured user may be copied and pasted by first selecting the user that will be copied, then performing a copy function. If you want to paste the users configuration over an existing configured user, then select that user and perform a paste operation. To duplicate an existing configured user, select the user, and then perform a duplicate function. After the duplicate, you may enter the new users name.

Groups

The groups menu selections manage groups of configured BLUES users. Configured users may be added to one or more groups for subsequent management. The “Copy Session Settings” menu command (under the Sessions menu) can be used to add or modify session settings that belong to a whole group. For example: a terminal session can be added to everybody in a group or a particular menu item can be removed from all terminal sessions that belong to a group of users. The ability to group users together is a powerful feature that can help the administrator manage large numbers of users.

New Group…

The New Group menu item creates a new group of BLUES users. After this menu item has been selected, you must enter the name of the group. The name of the group may be changed at any time by using the Group properties menu

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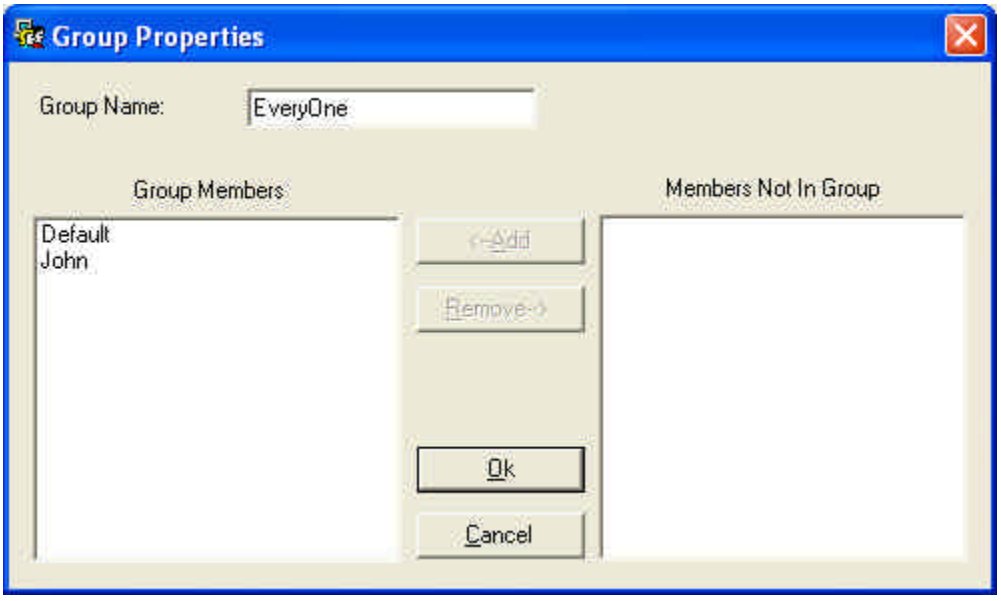
item or by clocking the mouse over the group name in the main Manager window. After the group name has been entered, press the enter key and the group properties windows will be displayed. The group properties window is described in the following sections.

Delete Group

Groups may be deleted by using this menu item. The group name must first be selected with the mouse before this menu item may be selected. When a group is deleted, only the group association is deleted, the actual configured users are not deleted from the BLUES database. **To remove a user from a group the group properties menu item must be used.** To delete a configured user, select the user name you want to delete and press the DELETE key. Deleting a configured user will automatically delete the user from any groups that the user belongs to.

Group Properties



The group properties a window is used to change the name of the group, add new members, and delete existing members from the group. The left portion of the windows contains a listing of the configured users that currently belong to the group. The right portion of the windows contains a list of the configured users that do not currently belong to the group. The group name appears at the top of

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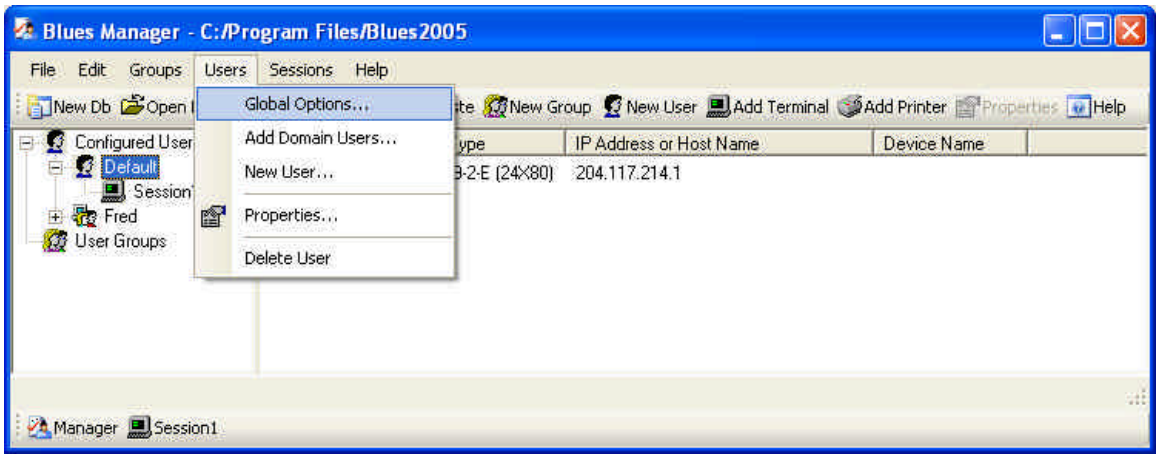
the windows and may be changed as desired. To add a new member to the group, simply select the user from the list and press the Add button. To remove a member from the group, simply select the user from the group and press the Remove button. One or more user names may be added or removed at once. When the group contains the names of the configured users that are desired, press the Ok button.

Users

The Users menu contains functions for adding, changing, and deleting users from the database. The following sections describe each menu item.



Global Options

The global options consist of options to control if the “Default” user set should be used for unconfigured users, if email messages should be sent when an unconfigured user attempts to use Blues, and an email account that is used to generate email alerts. These options are described below:

Use the Default user configuration when a Windows user has not been configured

This option is used when emulation is launched without specifying a Blues user name in the command line. When this occurs, Blues will query the Blues

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database to see if the particular Windows user is configured, if they are not in the Blues database, then this option determines if the Default user configuration should be used.

Generate email notification when unconfigured usage is attempted

If this option is set and an unconfigured user attempts to launch Blues, then an email notification message will be sent. The subject, body, from, and to fields of the email message may be customized from the email account tab.

Send mail through SMTP server

This option must be set to a valid email server ip address. This is the email account used to generate email notifications. The from and to fields may be used to further customize the alert email messages.

Add Domain Users

This function allows for the quick configuration of existing Windows domain users. This function will query Windows Directory Services for a list of valid users in the selected Windows domain. The operator may then choose from a variety of options to apply to the user(s). When the Ok button is pressed, the selected domain users are added to the Blues database. Existing users will not be overwritten without first being asked to do so.

New User

This function will create a new Blues user set. Associated with each Blues user, there are a set of options and settings that control that user's emulation. For details on these options, see the following section "User Properties".

User Properties...

This menu item may be used to change the user name, administrative privilege, password, and other options and settings associated with a user.

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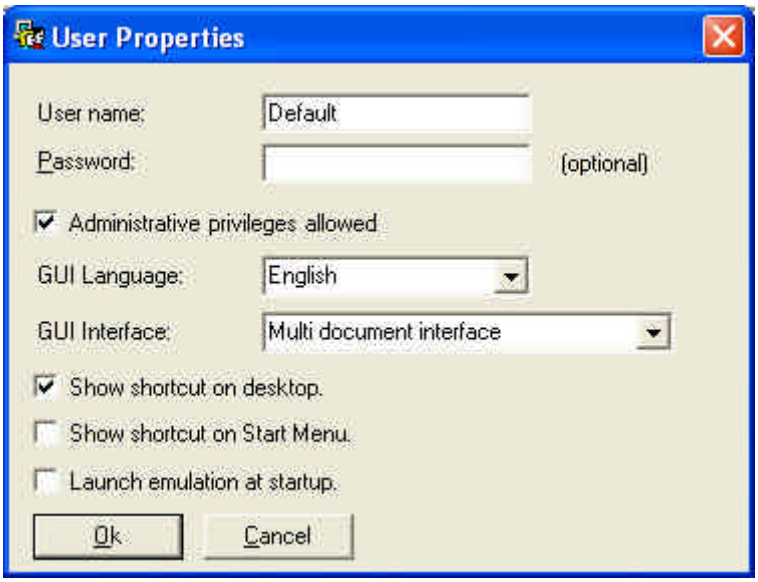

User Name – Each Blues user name must be a unique 20-character name. The user name is case insensitive. Each user gets a user.exe and a user.htm file created that may be used for No Touch Deployment from a network.

Password - The password is optional and only applies to users with Administrative privileges. To be able to run the Manager window, a user must have Administrative privileges. If a password is configured, then the Manager window will prompt for a password when it is started.

Administrative privileges allowed – This option allows the user to use the Manager application. Without this option enabled, the user may only use their terminal and printer sessions and not the Manager window.

GUI Language – This option determines what native language the Blues software is presented in. Currently, English and German may be selected.

GUI Interface – This option determines if each terminal and printer session is launched in a separate window (SDI) or if they appear within the same window (MDI).

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Show shortcut on desktop – If this option is selected, then a desktop shortcut will be created for the user. If this option is not selected, then any desktop shortcut previously created for this user will be removed from the desktop.

Show shortcut on Start Menu – If this option is selected, then a Start menu shortcut will be created for the user. If this option is not selected, then any Start menu shortcut previously created for this user will be removed from the desktop.

Launch emulation at startup – If this option is selected, then Blues will automatically be started when Windows is started or when the user signs on to the Windows operating system.

Delete User

This function will delete a user and all the sessions for that user. The user.exe and user.htm files are also deleted.

Sessions

The Sessions menu provides you with a set of functions used to manage users sessions. Before selecting any of these menu items you must first highlight the name of the user that you want the menu item to take affect on. The following sections are presented in the same order as they appear on the menu.

Add Terminal Session...

These menu items are used to add sessions to a particular user. To add any type of session, first highlight the user name that you want to have assigned the session, then perform the add session menu function. A terminal session will act a host display window; a printer session will act as a host printer window.

Add Printer Session...

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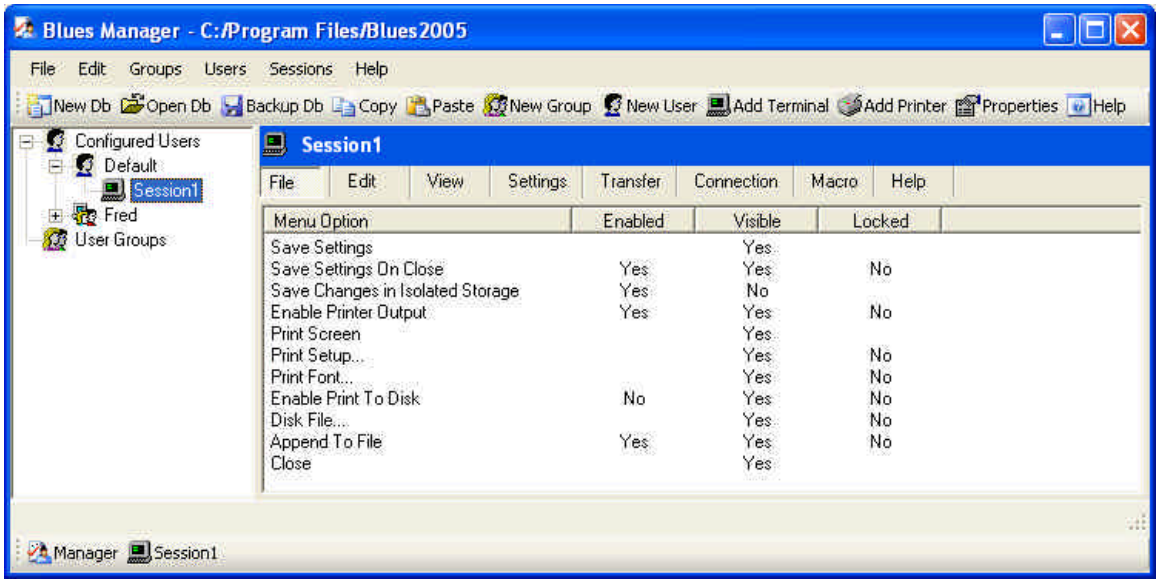
These menu items are used to add sessions to a particular user. To add any type of session, first highlight the user name that you want to have assigned the session, then perform the add session menu function. A terminal session will act a host display window; a printer session will act as a host printer window.

Delete Session

This function will delete the selected session from the Blues database.

Session Properties

When the session properties are displayed, the left pane of the Manager window displays all the possible menu functions that are available to the session.


Blues Manager - C:/Program Files/Blues2005
File Edit Groups Users Sessions Help
New Db Open Db Backup Db Copy Paste New Group New User Add Terminal Add Printer Properties Help
Configured Users
Default
Session1
Fred
User Groups
Session1
File Edit View Settings Transfer Connection Macro Help
Menu Option Enabled Visible Locked
Save Settings Yes
Save Settings On Close Yes Yes No
Save Changes in Isolated Storage Yes No
Enable Printer Output Yes Yes No
Print Screen Yes
Print Setup... Yes No
Print Font... Yes No
Enable Print To Disk No Yes No
Disk File... Yes No
Append To File Yes Yes No
Close Yes
Manager Session1

The right pane is used to edit a session's property. Along the top of the right pane are the various menus that appear in the session window. Each menu is further broken down into menu items. Each menu item may be hidden, enabled, and or locked. Hidden menus do not appear in the session window. Enabled menu items indicate that that particular option is enabled. The operator, thus locking that particular option or options from being changed, may not change locked menu items. In addition, a complete menu may be hidden from the operator, thus removing it from the operators view.

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To modify any session property, first, click on the menu item used to change the property. A menu will be displayed that allows you to hide, enable, lock, or modify the property.

For descriptions of each option, consult the section of this manual that describes the particular session type being edited (terminal or printer).

Launch Session

This function will start the highlighted session. If the Manager window is being run in single document mode, then a new window will be opened. If the Manager is being operated in single document mode, then a new tab will be created for the session.

Copy Session Settings…

This menu item is a powerful feature that lets the administrator take some or all session settings and copy those settings to other configured users. To use this feature you must first select the configured session that contains the settings that you want to copy to other users, then, choose the “Copy Session Settings…” menu item. The selected session is known as the source session.

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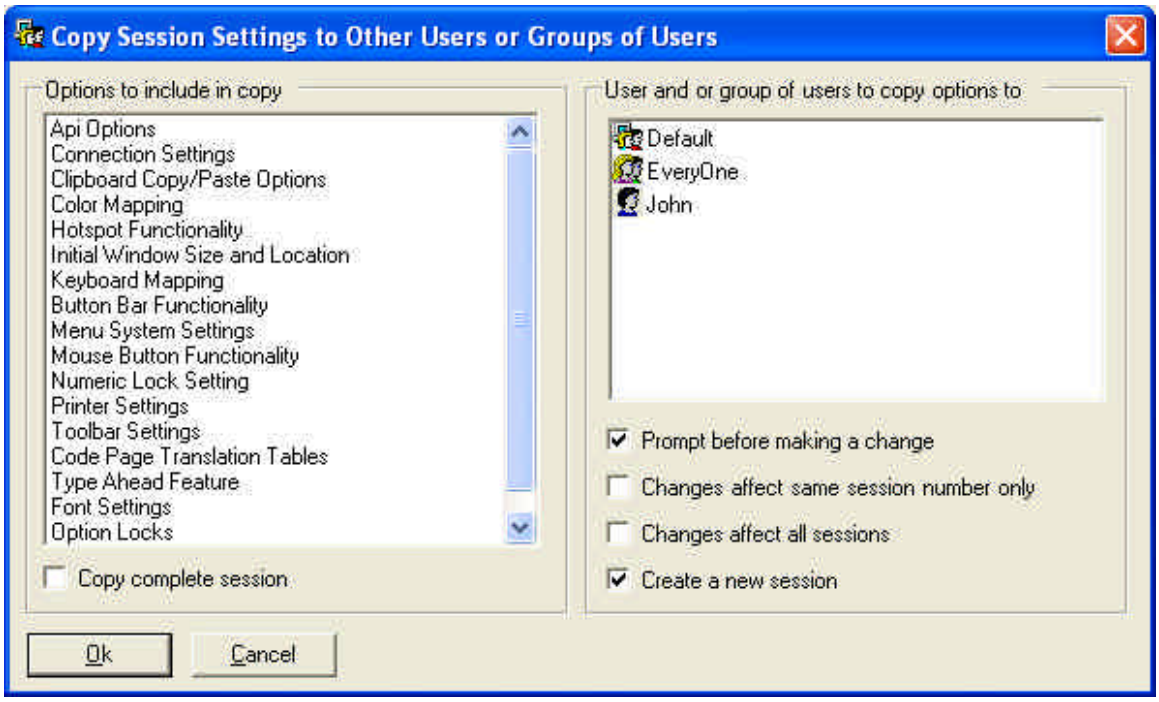

The “Options to include in copy” selection determines what settings will be copied from the source session. One or more types of settings may be selected. The “Copy complete session” checkbox may be used to copy the whole source session to the designated configured user(s).

The “Users and or Group of users to copy options to” list contains a list of all configured users and user groups. One or more users may be selected from the list. Only the selected configured users and user groups will be affected by the copy operation.

The “Prompt before making a change” option lets the administrator decide whether or not to copy the settings into each selected configured user’s session(s).

If the “Changes affect same session only” option is selected, then only sessions of the same number for each selected user are affected. For example: if SESSION1 (the first session) is the source session, then only the first session of each selected user will be affected by the copy.

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If the “Changes affect all sessions” is selected, then all of the selected configured user’s sessions will be affected by the copy.

If “Create a new session” is selected, then a totally new session will be added to each selected configured user or group of users. This option is a convenient method of adding a terminal or printer session to a group of configured users.

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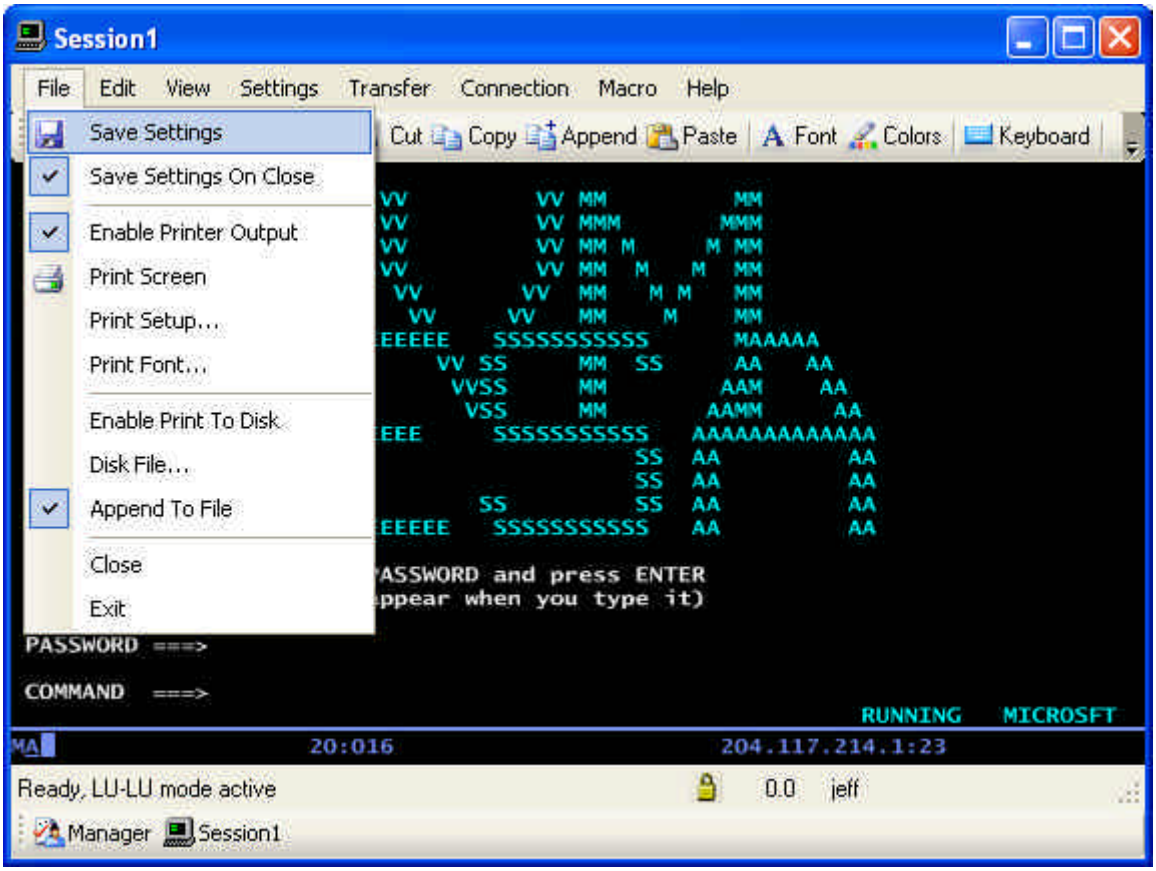
Terminal Emulation

This section describes the use of the Blues terminal emulation. The terminal emulation window emulates a native IBM display device such as an IBM 3279 terminal. This section is presented in a hierarchy that matches the menus of the terminal window. If you need information on a specific option, find the menu name (File, Edit, etc.) and then find the option under the main menu name.

File



Save Settings

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This File menu command is used to store the current session profile. All the operational and connection options currently in effect will automatically be re-activated next time the session is started. The settings are saved in the .NET isolated storage. Each time a terminal session is launched, it compares the date/time of the isolated storage settings with the session settings in the Blues database and uses the most recently saved version.

Save Settings On Close

This option may be enabled or disabled by selecting it. If it is enabled, then the terminal session will automatically save its settings when it is closed.

Enable Printer Output

This feature lets you turn on and off printer output whenever a print function is done. If this option is enabled, then this menu item will be checked. This option pertains to a local print function caused by pressing the print screen key or print screen menu item.

Print Screen

This option does an IBM local print screen key function to the currently selected printer device, as defined in **Print Setup.**

Print Setup

This option allows you to select any printer currently installed under Windows as the output device, or you may select a disk file as the output device.

Print Font

This option allows you to select the font that will be used when a local print function is performed. You should select a font that lets you print the entire host screen when you perform a local print.

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Enable Print To Disk

This feature lets you turn on and off output to a disk file whenever a print functions is done. If the print to disk feature is enabled, then this item will be checked.

Disk File...

This menu item lets you select the name of the next print to disk file. If the "Append To File" option has not been selected, then each time a print to disk is done the name of the file is incremented by 1. I.e. print0001.dat will be incremented to print0002.dat. Each local print function will cause a new disk file to be created.

Append To File

This menu item selects if a new file will be created each time a local print is done to a disk file. When this feature is selected, the local print data is appended to the currently selected print file name. If this feature is not selected, then a new file is created each time a local print is done.

Close

This File menu command allows you to close the BLUES 2006 terminal session window.

Exit

This file menu command closes the multi document interface window, thus closing any opened terminal and printer sessions.

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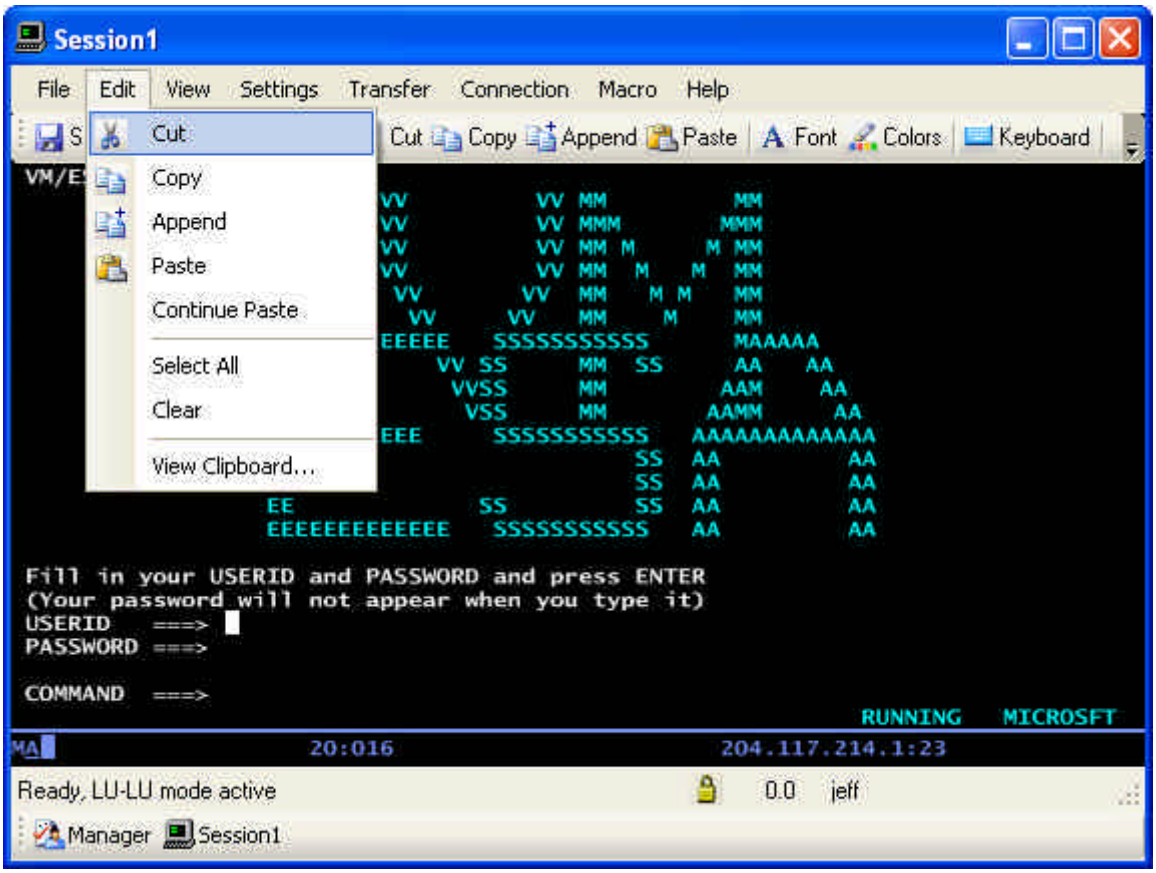
Edit



Cut

This Edit menu command copies the currently selected area of the emulation window to the clipboard, and erases it from the emulation window, if the data is unprotected. See **Mouse Controls** for how to select a portion of the screen.

Copy

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This Edit menu command copies the currently selected area of the emulation window to the clipboard. See **Mouse Controls** for how to select a portion of the screen.

Append

This Edit menu command appends the currently selected area of the emulation window to the clipboard. See **Mouse Controls** for how to select a portion of the screen.

Paste

This Edit menu command takes ANSII data only from the clipboard and enters it at the current cursor location. If insert mode is active, then the data will be inserted just as if it were being keyed in insert mode.

Continue Paste

This Edit menu command takes ANSII data from the clipboard and enters it at the current cursor location. If insert mode is active, then the data will be inserted just as if it were being keyed in insert mode. This function is only valid after a Paste function completed by reaching the end of the screen.

Select All

This Edit menu command selects the entire emulation window (not counting the status line) for any subsequent **Cut**, **Copy**, or **Clear** functions.

Clear

This Edit menu command erases the selected portion of the emulation window without copying it to the clipboard. Only unprotected data is cleared. See **Mouse Controls** for how to select a portion of the screen.

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View Clipboard

This Edit menu command will display the windows clipboard.

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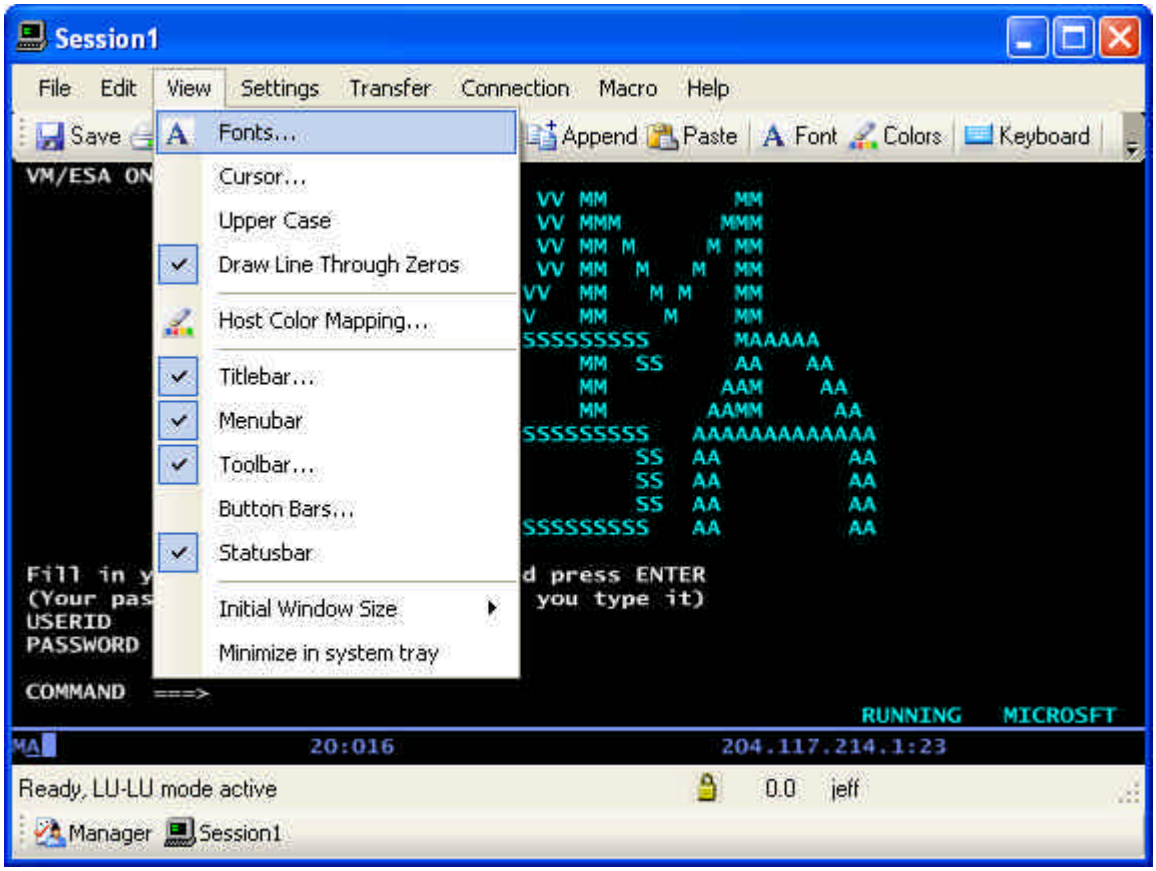
View



Fonts…

The Fonts function lets the operator select the font family to use for displaying the host screen. The font size is automatically sized to match the size of the terminal window. Only fixed width fonts are allowed to be selected. Variable width fonts are not allowed because the host screen is made up of a fixed number of rows and columns, which must line to be readable.

Configure Cursor

This menu function activates a dialog box that lets you select the type of cursor you want.

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Upper Case

This option will cause the display characters to display in all upper case. The actual data is still in upper and lower case as far as the host is concerned. This feature may be useful with smaller window sizes since the uppercase characters can be read easier.

Draw Line Through Zeros

This option enables or disables a line being drawn through all zero characters on the host screen. This can be used to better destingqush zeros from the ‘o’ character.

Host Color Mapping

This menu command activates a dialog box that allows you to customize your host color mappings. Each of the 8 host colors may be modified. Both the foreground and background colors may be changed. In addition, the operator information area's colors may be modified.

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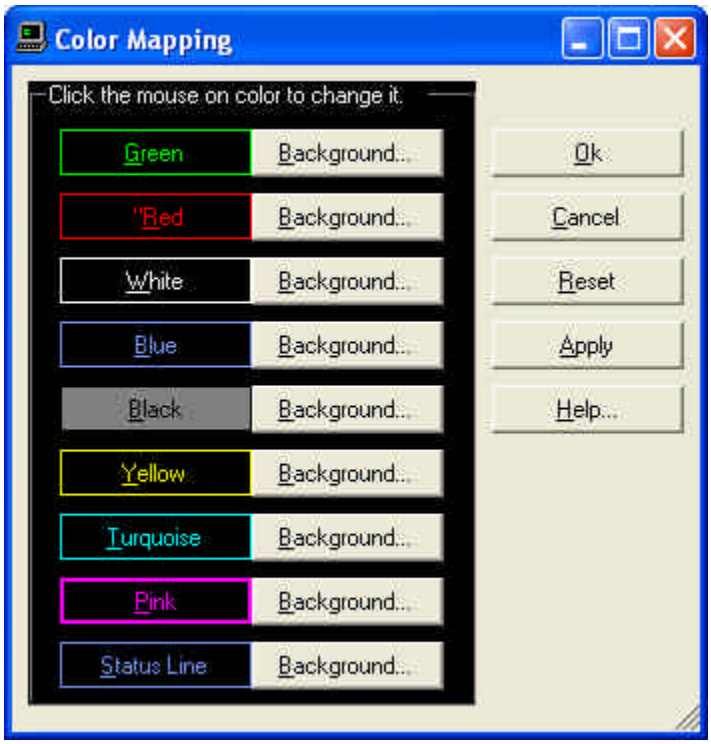

Colors are changed by clicking the mouse over the color to change. The Help button may be used to get help on the use of this dialog. The RESET button will reset the colors back to the default IBM colors. The Apply button may be pressed to preview the color change.

Titlebar…

This command may be used to remove or display the title bar at the top of the window. In addition, the title bar text may be changed to something more meaningful. If the title bar text field is left blank, then the session number will be displayed. I.e. Session1

Menubar

This command will either remove or display the menu bar. The menu bar is located under the title bar and contains menu commands. If the menu bar is removed, it is necessary to right click in the session window to perform menu functions or turn it back on.

Toolbar

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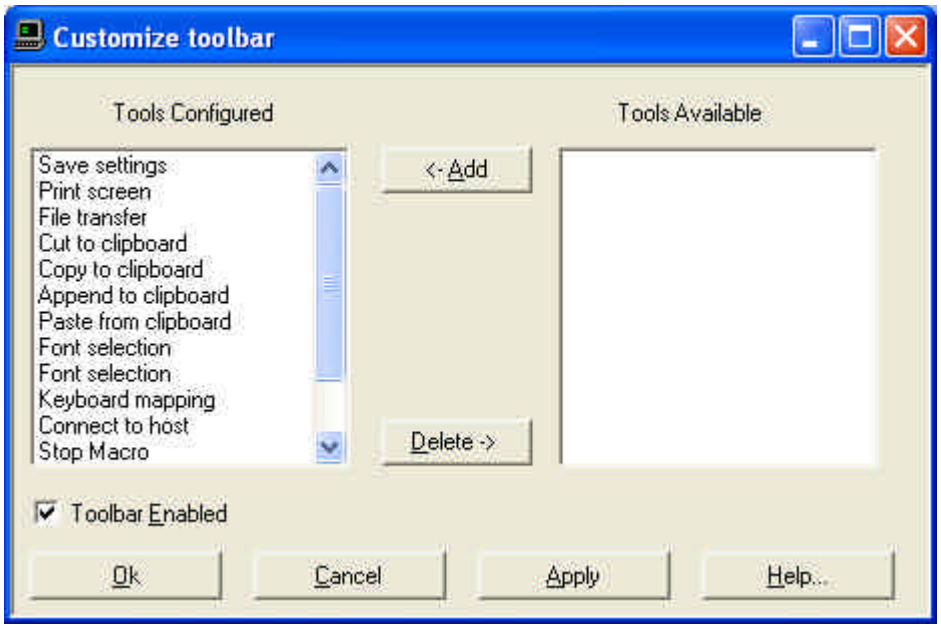
This function may be used to modify the contents of the toolbar and hide the toolbar.



Individual toolbar buttons may be added or removed as desired. By turning off the “Toolbar Enabled” option, the complete toolbar will be removed from the session window.

Button Bars...

This menu function allows you to customize two rows of buttons that are located under the tool bar and menu bar. The two rows of buttons may be removed or displayed. In addition, any function key or MACRO may be placed on a specific row. The following dialog allows you to customize the button bars:

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You may add or remove buttons from each row by first selecting one or more buttons from the appropriate list box and pressing the ADD or REMOVE button. To completely remove a row of buttons you may select the "Hide row of buttons" check box. After you have made your selections, press the OK or Apply button and the button bars will be displayed according to your selections.

Statusbar

This command will either remove or add the status bar from the bottom of the display window.

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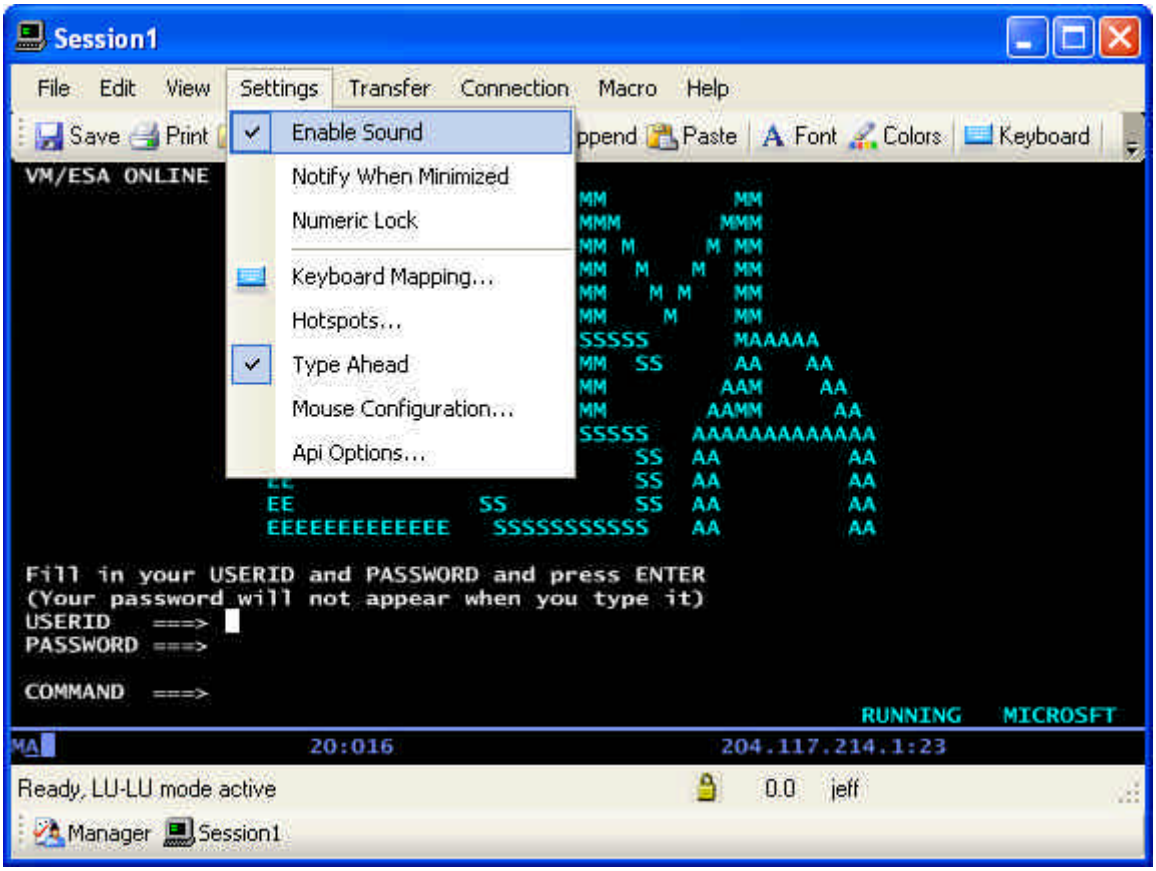
Settings



Enable Sound

This option lets you enable and disable the terminal alarm. The alarm is a short beep sound that is heard whenever an error occurs or whenever the host indicates that the alarm should be sounded.

Notify When Minimized

When activated, this feature will cause the terminal session to notify the operator if the host screen changes while the terminal session is in the minimized state.

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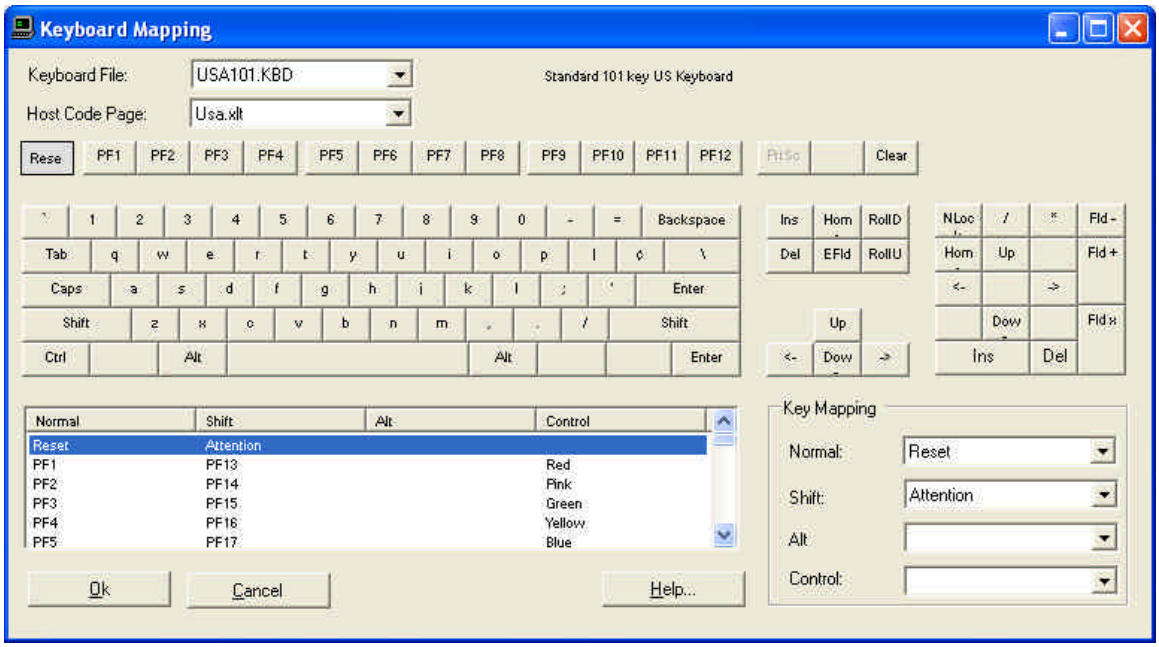
The operator will see a dialog box indicating that the screen has changed and be allowed to either view the session or ignore the change.

Keyboard Mapping...



A keyboard file contains information about a particular keyboard type, and the mapping of the keys. Keyboard mapping files are maintained in both the users isolated storage and the Blues software folder so that each computer user may have their own version of the file. **If the keyboard mapping is changed from the terminal session window, then it only affects the current operator, if it is changed from the Manager window, then it will affect everyone who uses the specific Blues user set.**

The keyboard window contains a graphic representation of the computer keyboard. If a key is clicked, then its mapping is displayed in the lower right of the window. Each key is also listed on the bottom left to easily search for a specific emulation key. To change a key mapping, highlight the key, then select the new function from the list at the bottom right of the window.

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The Host Code Page option is used to select the code page that the host computer is running in. IBM has defined a different code page for each country. Each code page contains the necessary characters for the language. To have the keyboard function properly, the correct host code page must be selected. Contact your mainframe administrator to determine what code page the host computer is using.

Hot Spots…

This menu function enables you to configure how 'hot spots' function. A “hot spot” is a word located on the host screen that is recognized by the BLUES Display session as having a special meaning.

When hot spots are active, they can cause commands to be sent to the host by positioning the mouse over a portion of the host screen and pressing the left mouse button. For example, if the word CLEAR appears on the screen, you can perform a CLEAR key by simply pointing the mouse cursor at the word CLEAR, and clicking the left mouse button.

The characters in the command word on the screen can be in either upper or lower case. The following hot spot command words are supported:

PF1 through PF24, PA1, PA2, and PA3, CLEAR, ENTER, PRINT, SYSREQ, F1 through F24

In addition, any macro that has been recorded will automatically become a hot spot.

The following dialog box will be displayed when the Configure Hot Spots menu item is selected:

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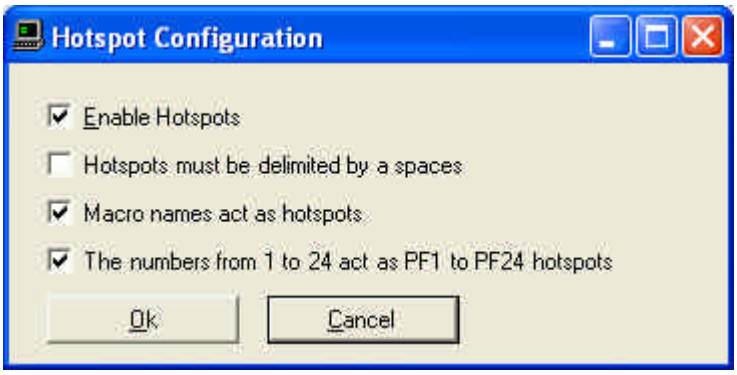
Hotspot Configuration
Enable Hotspots
Hotspots must be delimited by a spaces
Macro names act as hotspots
The numbers from 1 to 24 act as PF1 to PF24 hotspots
Ok
Cancel

"**Enable Hot Spots**" allows you to select if hot spot detection is to be performed. When this feature is not selected all other selections in this dialog box are meaningless. '**Draw Hot Spot Buttons On Presentation Space**" allows you to select if hot spots located in protected locations of the host screen will be displayed as push buttons. The "**Hot Spots Must Be Delimited By Spaces**" option is used to select if hot spots can be recognized inside other words or if the hot spot must be surrounded by spaces on the left and right. The "**Macro Names Act As Hot Spots**" feature allows you to select if the names of any previously recorded macros will also become hot spots. The "**The Numbers 1 To 24 Ack As PF1 To PF24**" feature allows numbers located on the host presentation space screen to become hot spots for the program function keys PF1 through PF24.

Type Ahead

When this function is selected, you can continue to enter keystrokes while the display session is busy sending and receiving information to the host. When the keyboard becomes enabled, the display session will begin processing the keystrokes you entered. If you press the RESET key, all keys in the queue will be purged.

Mouse Configuration

This option lets you configure how the mouse buttons will act when pressed. You may assign any function key, any of the clipboard functions, or any MACRO to both the left and right mouse buttons. If you are going to remove the title bar (see system menu), then the use of the left mouse double click is limited to displaying the title bar after it has been hidden. The following dialog box is displayed to configure the mouse buttons:

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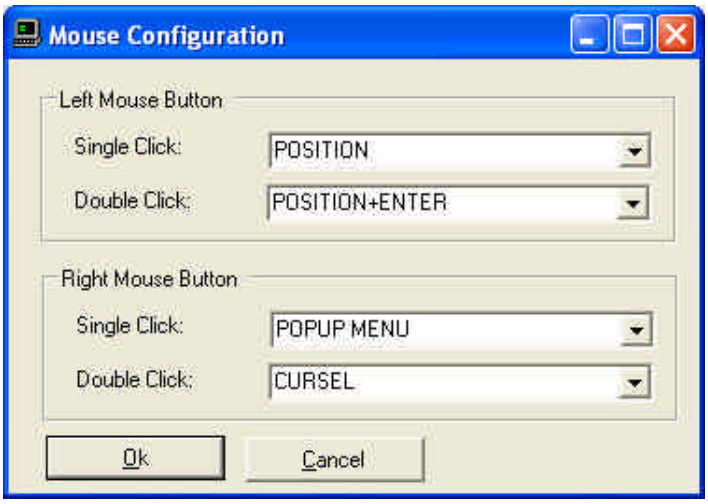
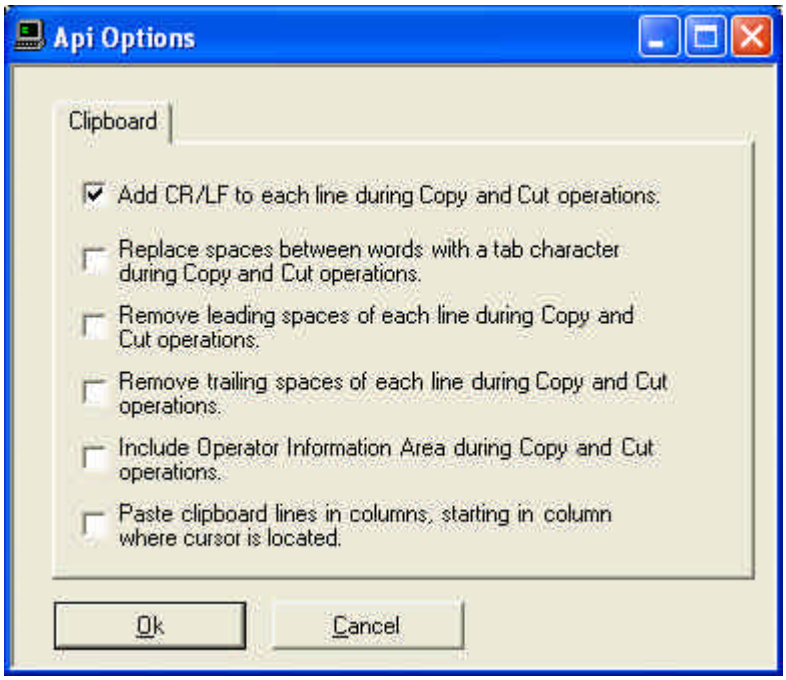


Use the left mouse button to select your assignments.

Api Options

This menu function lets you customize how the display session will copy and paste information to and from the clipboard.


Api Options
Clipboard
Add CR/LF to each line during Copy and Cut operations.
Replace spaces between words with a tab character during Copy and Cut operations.
Remove leading spaces of each line during Copy and Cut operations.
Remove trailing spaces of each line during Copy and Cut operations.
Include Operator Information Area during Copy and Cut operations.
Paste clipboard lines in columns, starting in column where cursor is located.
Ok
Cancel

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The **CR/LF AT END OF LINE** option indicates that the session should add a carriage return and line feed characters to the end of each line that is copies to the clipboard and to each line that is give to a DDE client.

The **Replace Spaces Between Words With A Tab** option indicates that the session should remove spaces between words and add a TAB character for the removed spaces when coping to the clipboard or to a DDE client.

The **Remove Leading Spaces On Each Line** option indicates that the session should remove all leading spaces from each line that is copies to the clipboard and to a DDE client.

The **Remove Trailing Spaces On Each Line** option indicates that the session should remove all ending spaces from each line that is copies to the clipboard and to a DDE client.

The **Copy Operator Information Too** option lets you copy the operator information area line into the clipboard and also to pass the operator information area to a DDE client. The whole operator information area is passed.

If this option is selected when a paste function is done, then each new line of text pasted into the terminal session will be pasted in the column where the cursor was located when the paste was performed.

For example: If the cursor is in column 70 and a paste is done that contains 2 rows of text, then both rows of text will start in row 70.

The "**Paste clipboard line in columns**" option causes lines to be pasted starting at the same column. For example: If 2 lines of information were copied into the clipboard and a paste function was done with the cursor located in column 60 of the terminal session window, then the first line would be pasted starting at column 60 and the second line would be pasted on a subsequent line starting in column 60.

Transfer

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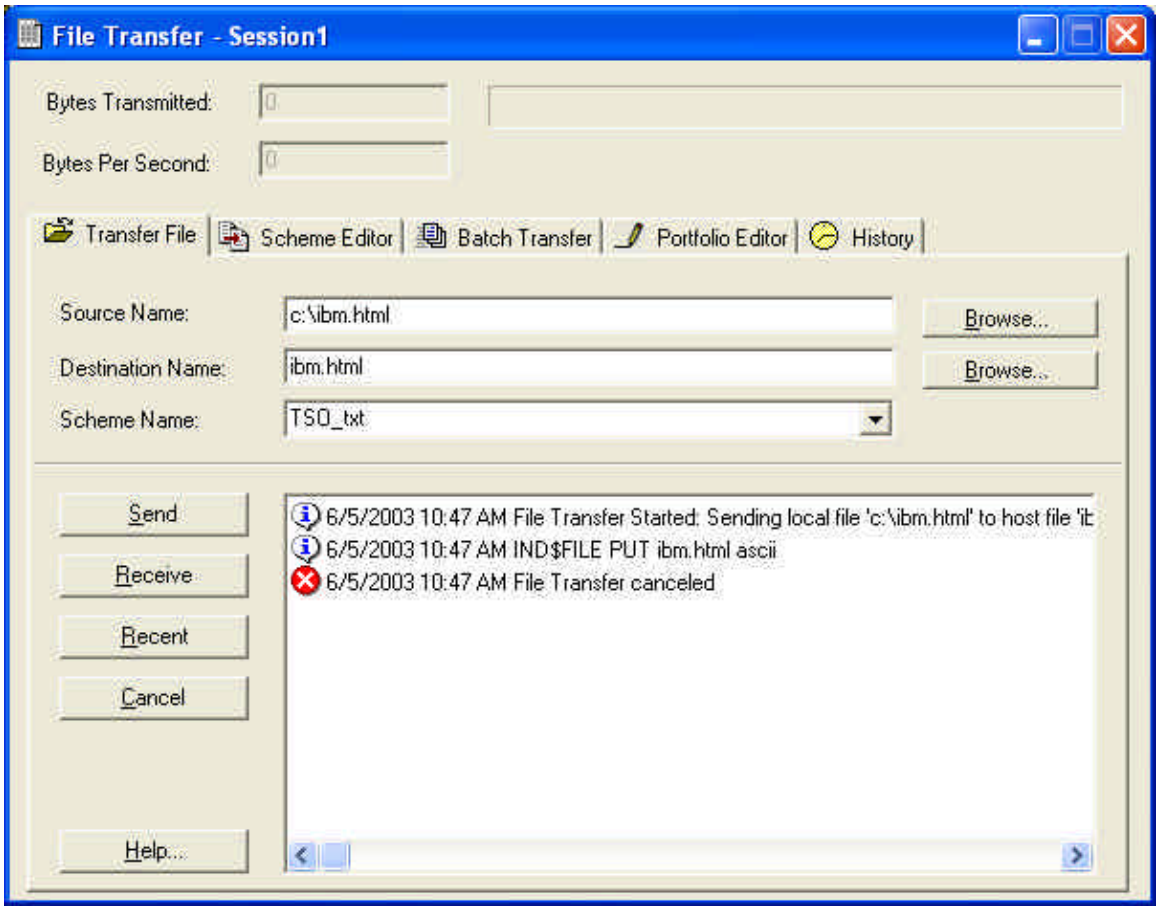
The Transfer menu may be used to either activate the file transfer window, or to transfer an existing portfolio. A portfolio is one or more file transfers. Each file transfer in a portfolio has a scheme associated with it. A scheme is a set of file transfer options that dictates how the file is transferred (i.e. as a binary file or text file etc.). Portfolios let you group file transfer operations so that you can transfer a portfolio at a future date by simply selecting the portfolio name from the Transfer Menu.

File Transfer Main Window

The file transfer main window contains five separate windows. Clicking the mouse over the appropriate tab activates a particular window. The file transfer window looks as follows:



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The five windows consist of the Transfer file window, Scheme Editor window, the Batch Transfer window, the Portfolio Editor window, and the History window. The following sections describe each window.

Transfer File Window

The Transfer window allows that transfer of a single file. Files are transferred based on a scheme. A scheme defines the methods, file formats, and host operating system type. See Scheme Editor window for details on editing schemes. A default set of schemes is installed with the software. To transfer a file, selected the source file name, destination file name, and scheme name and then press the send or receive button. A list of the last 20 file transfers is maintained and may be accessed by pressing the Recent button. Once the file transfer is started, the status of the transfer is displayed in the status box. A history file is maintained and may be viewed from the History window.

To cancel a file transfer, you may press the cancel toolbar button or select cancel from the Transfer menu.

Scheme Editor

Schemes may be created, edited, and deleted from the Scheme Editor window. When editing a scheme, the following window is displayed:

Host Protocol Type

This option selects which host operating system you are connected to.

TSO - The host is running under TSO.

CMS - The host is running under CMS.

CICS - The host is running under CICS.

FTP - The host is a TCP/IP FTP host.

File Transfer Application

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Allows you change the name of the file transfer program running on the host computer. The default value is IND$FILE. This option is meaningless when using FTP.

Additional Options

You may add extra options to the IND$FILE command sent to the host to start the file transfer. These options are specific to each host.

File Transfer Method

Selects one of two methods of file transfer. Structured Field is usually faster than buffered. This option is meaningless when using FTP.

HOST / PC CODE PAGE

This field lets you select the Host and PC code pages for text mode file transfer. Each selection corresponds to a file in the installation directory. The file names have 6 numbers in each name. The first 3 digits are used to identify the host code page and the last three digits are used to select the PCs code page. A code page defines what each of the possible 256 characters should be displayed and printed as. IBM has defined many sets of different code pages. The first 2 letters of each selection is an abbreviation for the host country as follows:

US	-	United States
GR	-	Germany
FI	-	Finland
IT	-	Italy
SP	-	Spain
UK	-	England
FR	-	France
BG	-	Belgium
GK	-	Greek

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Each code page translation file may be changed with any standard editor such as edit.exe. Each line in the file represents a single character translation.

Before defining the File Specifications, you need to determine which transfer environment the host computer uses - TSO, CMS, CICS, or FTP. Once you make the Host System selection, file specification parameters, which do not apply to your environment, will be grayed out. The File Specifications for the different environments are discussed in their respective sections below.

FileType

TEXT MODE - During a send command from the local system, this command option Set identifies a PC text file consisting of ASCII character codes This entry directs the host to translate ASCII to EBCDIC code for storage on the host. During a RECEIVE command from the host, this command option directs the host program to translate the host's EBCDIC code into ASCII before transferring the file to the local system. See CRLF.

BINARY MODE - This command tells the host not to make any changes to the file during transfer. See NOCRLF.

File Creation

This option lets you select how a file that is received will be created.

APPEND - This command tells the host to add the data to the end of an existing file. Be sure to specify this option when you are transferring data to an existing file. If you do not specify APPEND and the file exists, the original file will be deleted and replaced by the file you are transferring.

NEW - Data replaces any existing file. If no file exists, one is created. For files transferred to the host, one of the File Creation Options must be specified.

Record End

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This option specifies how records are separated during the file transfer.

CRLF - Records are separated with a Carriage Return and Line Feed when sent to or received from the host.

NOCRLF - Carriage Returns and Line Feeds are neither added nor deleted. **If you choose BINARY, you must select this option.**

Buffer Size

Allows customization of the size of structured field data that is sent and received during structured field type of file transfers.

Record Length

This is an optional field. This field refers to the logical record length for the host file. If this field is blank, the system will default to a logical record length of 80 characters.

Block Size

This refers to the block size of the host data set. It is the number of bytes in a block of data. If you do not specify block size, the system defaults to the value of the Logical Record Length.

Record Size

This is an optional field. The default value of this field is FIXED.

FIXED- specifies that a data set with a fixed record length is to be created.

VARIABLE - Specifies the creation of a data set containing variable length records.

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UNDEFINED - Refers to the creation of a data set containing an undefined record length.

Space

Use this option to specify the amount of space to be allocated when creating a new data set. When you enter SPACE in the file specifications, follow it by a quantity. After the quantity, specify the kind of increment. If you do not specify SPACE, the system defaults to the value of BLKSIZE.

Comments

The comments field contains any comments that you want to be assigned to the host file when it is created.

FTP Host Name

The FTP host name determines which host the scheme may connect to. The name may be either a TCPIP address like 111.222.333.444 or a valid server name such as ftp.microsoft.com. The address or host name must be reachable over the TCP/IP protocol stack.

FTP Port

The FTP port must match the port number configured at the host computer for FTP. The industry standard default setting is 21.

FTP User Name

Each FTP host requires a user name and password to be able to access the host. The industry standard “Anonymous” user name may be selected, or a specific user name and password may be selected. Some FTP hosts require a valid user name and password for FTP file transfers.

FTP Time-outs

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The time out values determine when to assume an error has occurred during a FTP host browse, or FTP file transfer operation. All time out values are in seconds. The connect time out is used during the connection process and the receive time out is used during FTP file transfers.

Batch Transfer Window

The Batch Transfer window is used to start a portfolio file transfer. To transfer a portfolio of files, simply select the configured portfolio and press the Start button. Use the Portfolio editor window to manage portfolios of file transfer operations.

Portfolio Editor Window

Portfolios are a way to organize batch file transfer functions. Portfolios can make your life easier if you transfer the same files periodically. The portfolio editor window is used to create, edit, delete, and save portfolios. A portfolio is one or more file transfers. Each transfer in a portfolio consists of four options, the direction, the source file name, the destination file name, and the scheme name. Schemes may be customized, created, or deleted from the Scheme editor window. Portfolios are executed from the Batch Transfer window.

Each line in the portfolio represents a file transfer. New lines may be added by pressing the Add button. To delete a line, first highlight the line to be deleted and then press the Delete button. To modify a line, highlight the line and then press the Edit button.

History Window

The History window displays a history of file transfer operations. The history file should be erased periodically to avoid having the history file from growing to large.

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There are three different history event types that may be viewed: (1) Information events, (2) Error events, and (3) Successful Events. Information events are general in nature and give information about when and what was transferred. Error events occur when a file can't be successfully transferred. Successful events indicate when a file was successfully transferred and what the file size of the transferred file was.

File Transfer Messages

While using file transfer, a variety of messages can appear on the screen. These messages may contain status information or they may require a specific response. Messages can originate from either the Blues software, or from the host file transfer application. If the host file transfer application sends an error message, then it will be displayed as "File Reansfer Failure : the message", where "the message" is replaced with the actual message. The following is a list of messages generated by the Blues software.

File Transfer Complete : x bytes transfered.

This message displays when the file transfer operation has completed successfully.

File Transfer Failure : invalid or unknown host response received !
File Transfer Failure : incorrect starting point : unrecognized screen.
File Transfer Failure : not connected to host.

Any of the above four messages indicates that the session is not in the correct state for file transfer. The best starting point for the file transfer application is the Ready prompt.

File Transfer Failure : host response timeout occured.

This message indicates that the host did not send an expected response or data within a certain time limit.

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File Transfer Failure : maximum retries exceeded.

This message appears when you attempt to SEND a file, and the host rejects the data three consecutive times. The SEND operation is automatically canceled after three SEND attempts. Check your command line format and parameters to be sure they have been entered correctly. Retry the SEND command.

File Transfer Failure : host file allocation error.
File Transfer Failure : canceled by host.

These messages indicates that the file transfer was canceled due to an event at the host or by the operator pressing the cancel button.

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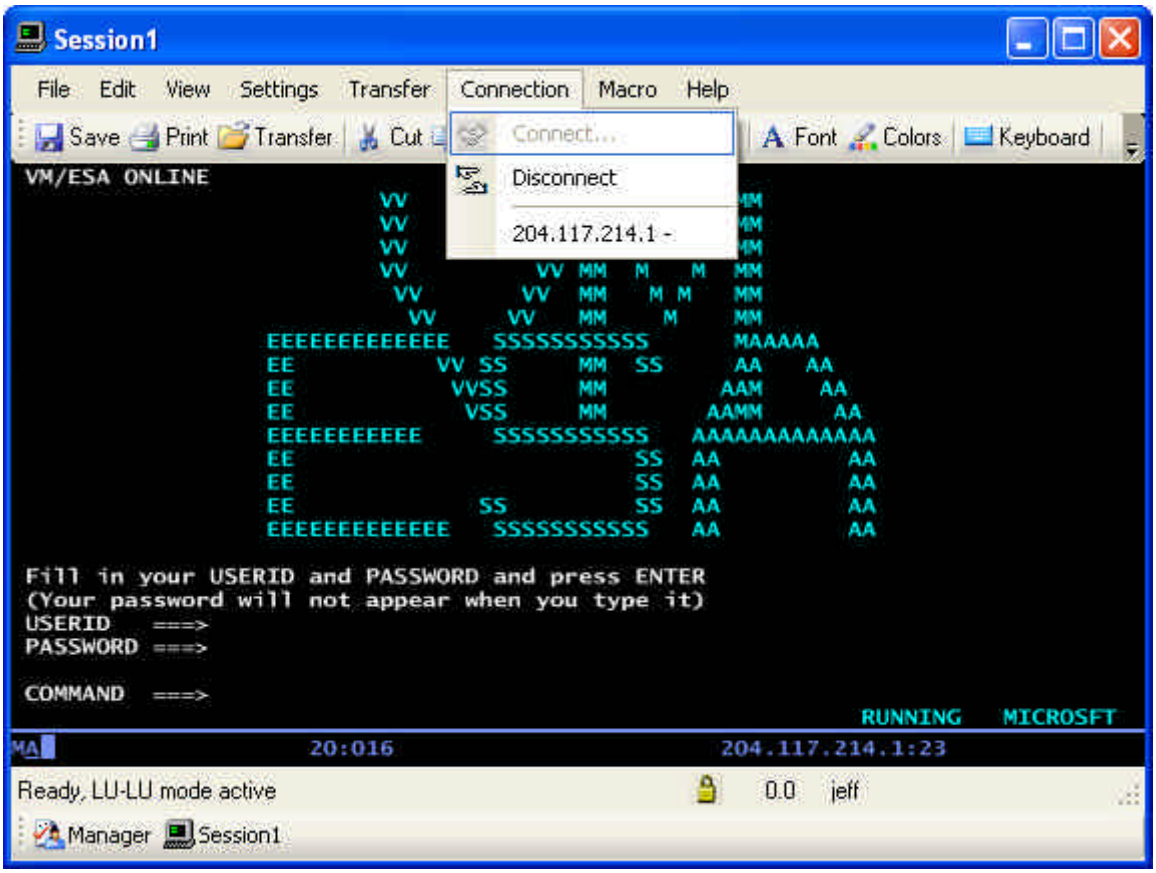
Connection



Connect…

This menu item is used to connect the session to the host. Connection options are displayed and may be added, changed, or deleted if they are not locked by the Manager application.

Each session can have one or more destinations configured. A destination is set of connection options that determine how and where to connect to a host computer. The first destination in the list is known as the primary destination.

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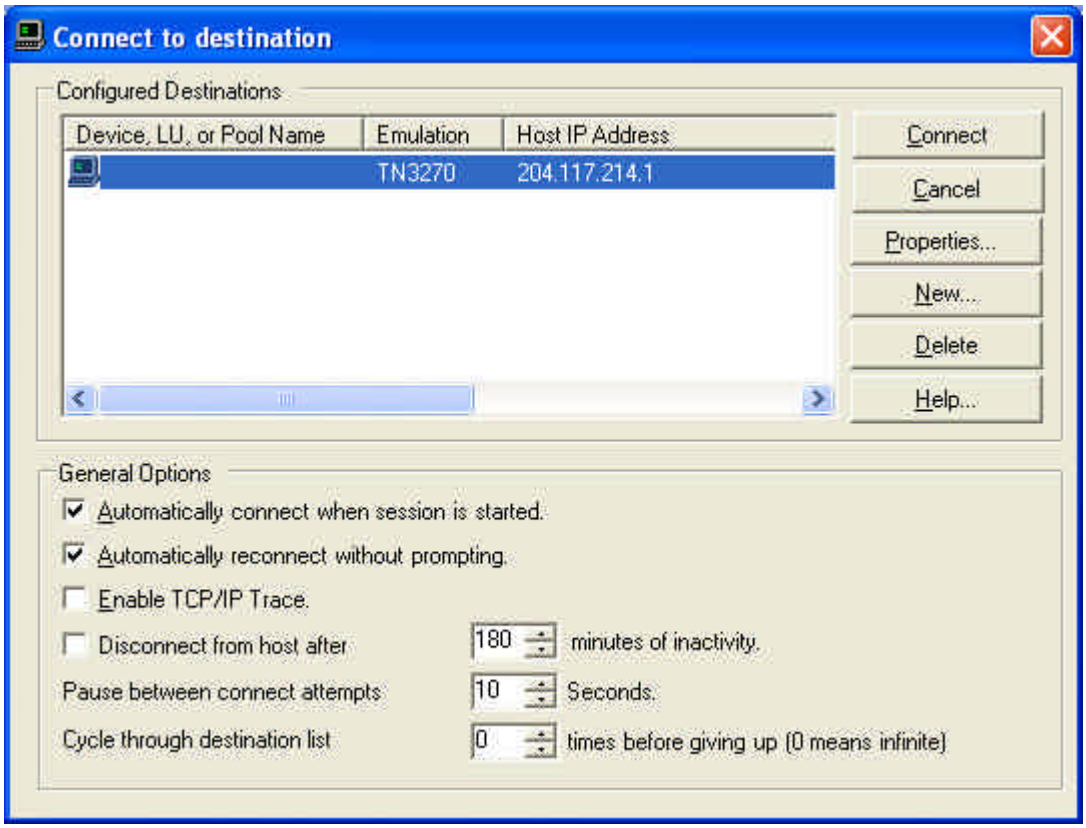
The primary destination is the destination that will be used first after you start a session. Alternate destinations can be configured to be automatically switched to if the primary destination can't be made or is lost. To add new destinations you must press the New button. To remove a destination, you will have to select the destination you want to delete and press the Delete Button.



The connection window contains a set of options that apply to all destinations and a set of options for each destination. To edit a specific destination, select the destination with the mouse and click on the Properties button.

Automatically connect when session is started

This option determines if the session automatically attempts to connect to the primary destination when it is first started. If this option is not selected, then the operator must manually connect to the host computer.

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Automatically reconnect without prompting

This option takes affect when a session gets abnormally disconnected from a host. When selected, the session will attempt to reconnect. If more than one destination is configured, connection to the next destination will be attempted. If only one destination is configured, then an attempt to connect to it will be done. The amount of time between connection attempts and the number of times to attempt to connect can be controlled with the “Pause between connect attempts” and “Pause between connect attempts” options.

Enable TCP/IP Trace

This option can be used to diagnose emulation problems. If this option is enabled, then a text file named sessionx.trc will be generated, where x is the session number. The file contains the necessary information for our support staff to properly diagnose problems.

Disconnect from host after x minutes of inactivity

This option defines if the session should automatically disconnect from the host after not being used for a period of time. This option is useful to cause the session to disconnect for security reasons, and for customers who lease mainframe logical units and want to free up logical units when they are not in use.

Pause between connect attempts

This option determines the number of seconds to wait between connection attempts. Each configured destination is subsequently attempted to connect until a connection is established, or the retry limit is exceeded. This option controls the time interval that occurs after a connection attempt fails and the next connection attempt is performed. To avoid unnecessary network traffic, it is suggested to have this value set to at least 180.

Cycle through destination list x times before giving up

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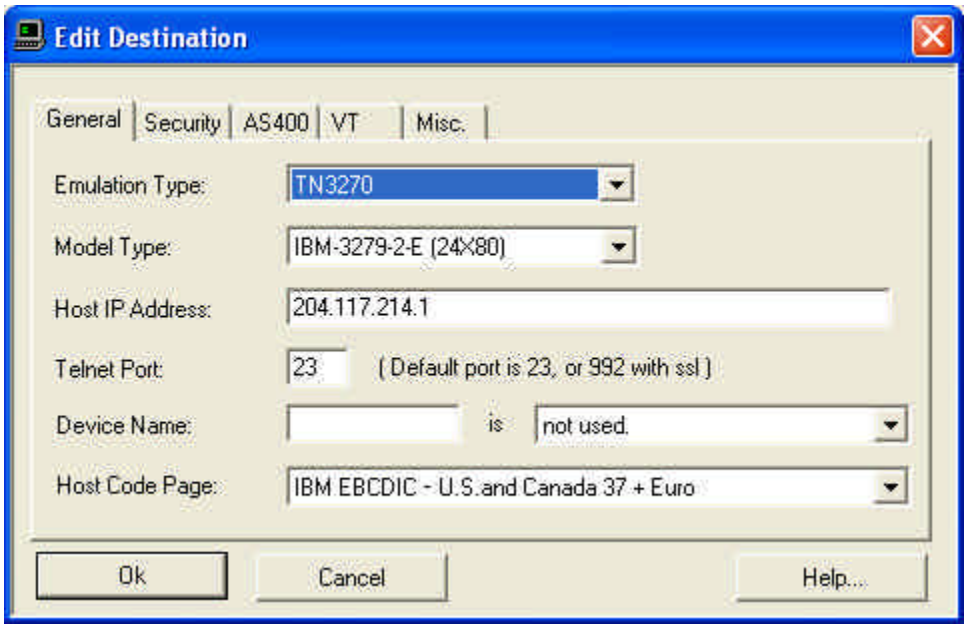
This is the total number of times to try each destination before giving up a connection attempt. A value of 0 indicated there is no maximum and to try forever.

Edit Destination

The configure destination window is used to configure how the session connects to the host. The terminal type, emulation model, TCP/IP address ,CP/IP port, and device name are configured from this window.



Emulation Type

This option is used to select the type or mode of emulation; currently telnet 3270 telnet 5250 and DEC VT100 may be selected. The emulation supports the latest ISO specification regarding telnet 3270 and telnet 5250. TN5250 is usually selected when connecting to AS/400 midrange computers and TN3270 for mainframe computers. Depending on the emulation type, different device types are selectable for the “Model Type” field.

Model Type

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The model type determines the number of rows and columns of the host screen as well as the capabilities provided by the host DataStream. Model type also can affect the connection process. The Blues software sends the model type in the TCP/IP connection negation message. The host telnet server must be configured to accept the device type, or else, the connect will fail with an error.

Host IP Address

The IP Address or Host Name field lets you enter either a well-formed TCPIP address or enter a symbolic name. This field must contain the TCPIP address or name of a TN3270 Server, TN5250 Server, TCPIP host, or AS400. Well-formed IP Addresses are in the form a.b.c.d, where the letters a,b,c, and d are decimal numbers between 0 and 255.

Telnet Port

The **Telnet Port** may be changed from the default of 23 to some other value. The telnet port must match the port you have configured at the TN3270 Server, TN5250 Server, TCPIP host, or AS400.

Device Name

The device name may be used to select a specific logical unit on the host to connect to, or a specific printer logical unit name that should be paired with the logical unit that is used to connect with.

Two “Wild Card” characters may be used in the Device Name. The asterisk character (*) will get replaced with the Windows user name who is signed on at the time. The question mark (?) character will be replaced with the machine name.

Certain situations require each computer user to always connect to a specific logical unit on the host. When this becomes an issue, then the device name option must be used to select the specific host logical unit name to connect to.

Some telnet servers use the device name as a pool name. A pool is a group of specific logical units or device names that are shared among terminal and printer

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session. If device pooling is being used, then enter the pool name to be used during connection.

SSL and TLS Enabled

This option enables or disables the secure sockets TCP/IP protocols. When this option is enabled, it is assumed that the host computer or telnet gateway that is connected to is configured for encrypted conversations. The secure conversation is negotiated as part of the connection process. The highest level of security that both parties agree on is used. The Blues emulator uses the .NET framework secure sockets layer and therefore provides the highest level of encryption available today.

Verify Server Certificate

This option is only available if the SSL/TLS option has been selected. As part of the SSL/TLS negotiate, the server can be configured to send a certificate proving the validity of the server. This certificate can then be verified by the Blues emulator if this option is selected. If the server certificate fails to verify, the Blues emulator will abort the conversation.

Send Client Certificate

This option is only available if the SSL/TLS option has been selected. As part of the SSL/TLS negotiate, the Blues emulator can be send a certificate proving the validity of the emulator. If this option is selected, you also must select the certificate to send. Any currently installed certificate may be selected.

Prompt for AS/400 User name and password

This option determines if BLUES should present a sign on window and encrypt the AS/400 user name and password. When this option is selected, BLUES will encrypt the AS/400 user name and password before sending it to the AS/400. If the AS/400 accepts the encrypted user name and password, the initial sign on screen is bypassed and the main start up screen is displayed.

You may choose to not send the encrypted user name, in which case the AS/400 will be the first screen displayed by the AS/400.

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Current Library

Initial Menu

Starting Program

The “Current Library”, “Initial Menu”, and “Starting Program” options may be used to cause the AS/400 to configure the device name with these options. See the appropriate AS/400 documentation for details on the meanings of these fields.

Enable Keep-alives

This option causes a special “Hello” No Operation (NOP) message to be sent to the host every few minutes. The only importance of the message is keeping the TCP/IP connection from being closed by underlying network settings. Some networks are configured to automatically disconnect a TCP/IP connection when no traffic is detected for a specified amount of time; this feature disables such a feature.

If Device is in use, increment it and try again

This option is only meaningful when a specific device name has been configured. If a specific device name is configured and this option is turned on, then if a “device busy” error response is returned from the host, then Blues will increment the device name and try to connect to that name. This continues until a “not busy” condition is detected. This option can be used if many logical units are configured on the host with names that are contiguous, like LU002, LU003, LU004, etc. Many sessions can be configured with the device name of LU002 and when they connect each one will get the first available logical unit.

Send Backspace as DEL key

If this option is selected, then the delete (DEL) character is sent to the telnet server as a result of pressing the backspace key. If this option is not set, then the standard backspace (BS) character is sent to the telnet server.

Send Return key as CR LF

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If this option is selected, then the a carrage return and line feed characters are sent to the telnet server as a result of pressing the Return key. If this option is not set, then the standard line feed (LF) character is sent to the telnet server.

Disconnect

This menu item will disconnect the session from the host.

Macro

The Macros menu lets you record, play, edit, and delete macro files. Macro files are typically saved in your private directory. The Macro menu displays as follows:

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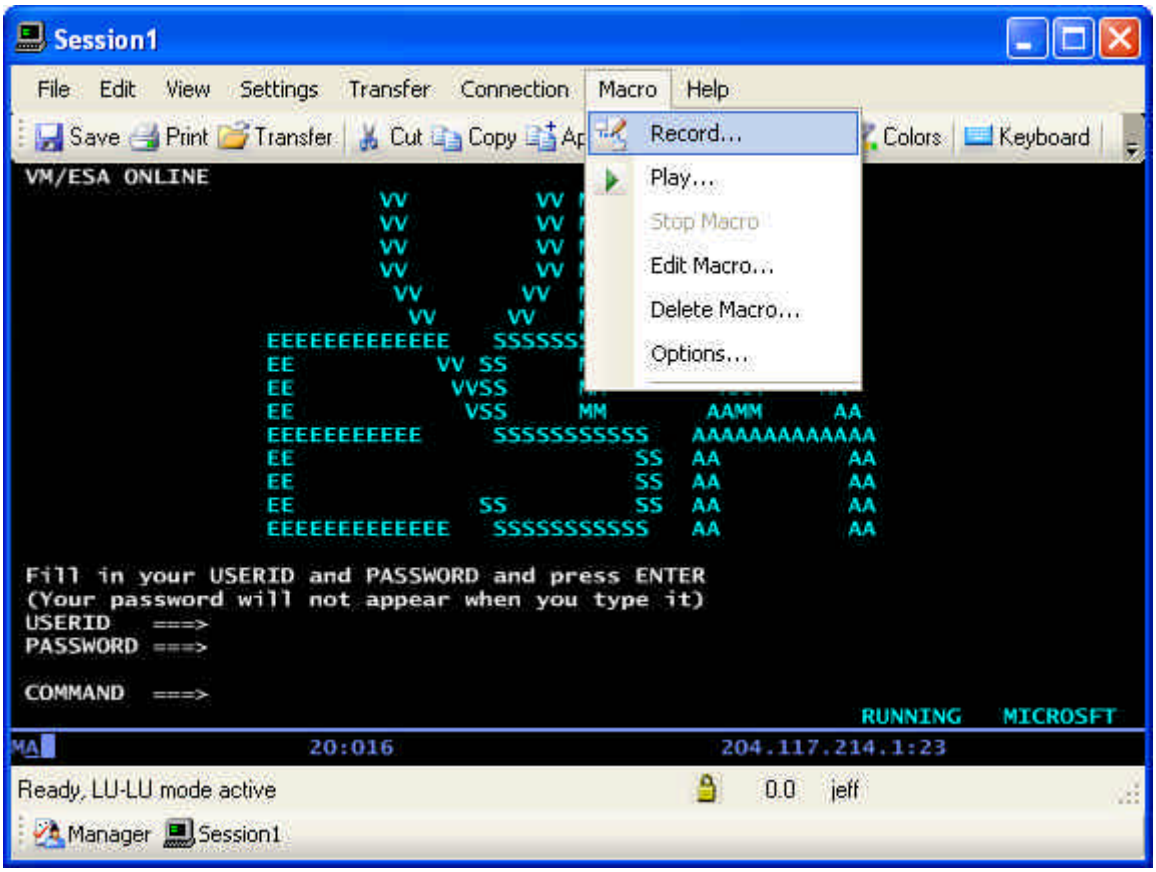

Record

This menu function allows you to either enter a new macro file name or re-record an existing macro. Once you have selected the macro name, the macro will start recording. You may stop the recording by pressing the Stop button. All keys entered are recorded. The macro records when you send something to the host computer and when you receive a screen from the host, this allows it to play the macro back in a timely fashion. Once you have recorded a macro, the macro name will automatically be placed in your keyboard mapping. You can then map the macro to any key position that you want.

Play

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To Play a macro you must first display the host screen that was present when you first selected to record a macro. Once you select the macro name, the macro will start playing back.

Stop

This menu item will stop a macro when a macro is in the process of being recorded or played.

Edit

Macros may be edited and changed by selecting Edit Macro from the MACROS menu item. Each line of the macro file contains a keyword followed by optional parameters and values. Any keyword that ends with a colon (':') is considered a placeholder label. Labels may be jumped to by a GOTO keyword. The following list summarizes all macro keywords:

"DATA_KEYS Hello World"	- Normal ANSI text to be entered.
"PF1"	-PF1 or F1 function key.
"PF2"	-PF2 or F2 function key.
"PF3"	-PF3 or F3 function key.
"PF4"	-PF4 or F4 function key.
"PF5"	-PF5 or F5 function key.
"PF6"	-PF6 or F6 function key.
"PF7"	-PF7 or F7 function key.
"PF8"	-PF8 or F8 function key.
"PF9"	-PF9 or F9 function key.
"PF10"	-PF10 or F10 function key.
"PF11"	-PF11 or F11 function key.
"PF12"	-PF12 or F12 function key.
"PF13"	-PF13 or F13 function key.
"PF14"	-PF14 or F14 function key.
"PF15"	-PF15 or F15 function key.

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"PF16"	-PF16 or F16 function key.
"PF17"	-PF17 or F17 function key.
"PF18"	-PF18 or F18 function key.
"PF19"	-PF19 or F19 function key.
"PF20"	-PF20 or F20 function key.
"PF21"	-PF21 or F21 function key.
"PF22"	-PF22 or F22 function key.
"PF23"	-PF23 or F23 function key.
"PF24"	-PF24 or F24 function key.
"PA1"	-PA1 key.
"PA2"	-PA2 key.
"PA3"	-PA3 key.
"ENTER"	-enter function key.
"SYS_REQ"	-sys request function key.
"TAB"	-tab key.
"BACKTAB"	-back tab key.
"NEWLINE"	-new line key.
"CLEAR"	-clear function key.
"ALT_CURSOR"	-alt cursor key.
"ATTN"	-attention key.
"CUR_SEL"	-cursor select key.
"DUP"	-dup key.
"ERASE_EOF"	-erase eof key.
"ERASE_INP"	-erase input key.
"FLD_MARK"	-field mark key.
"HOME"	-home key.
"CUR_LEFT"	-cursor left 1 key.
"CUR_LEFT2"	-cursor left 2 key.
"CUR_RIGHT"	-cursor right 1 key.
"CUR_RIGHT2"	-cursor right 2 key.
"RESET"	-reset key.

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"KEYUP"	-cursor up key.
"KEYDOWN"	-cursor down key.
"BACKSPACE"	-backspace key.
"INSERT"	-insert key.
"DELETE"	-delete key.
"PRINT"	-print screen key.
"WAIT"	-receive 1 screen from the host
"DARK_KEYS ????"	-non-display keys.
"GOTO label"	-go to label.
"RUN command line"	-Start another program
"CUT_CLIP sr,sc,er,ec,tabs,crlf"	-Cut to the clipboard. the parameters are starting row, starting column, ending row, ending column, a 1 if put tabs between words, and a 1 if add carriage returns and line feeds at line end.
"COPY_CLIP sr,sc,er,ec,tabs,crlf"	-Copy to the clipboard. the parameters are starting row, starting column, ending row, ending column, a 1 if put tabs between words, and a 1 if add carriage returns and line feeds at line end.
"PASTE_CLIP	-Paste from the clipboard.
"SEND pcfile host file	-Upload a file to the host.
"RECEIVE pcfile host file.	-Download a file from the host.
“FIELD_EXIT”	-5250 Field Exit key.
“FIELD_PLUS”	-5250 Field Plus key.
“FIELD_MINUS”	-5250 Field minus key.
“ROLL_UP”	-5250 Roll up key.
“ROLL_DOWN”	-5250 Roll down key.

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“HELP”	-5250 Help key.
“HOST_PRINT”	-5250 Host Print Screen key.
"EXIT",	-close session window
"TIMEDWAIT x",	-wait x seconds
"ESCAPE_KEY",	-telnet escape key
"HOLD_KEY",	-telnet hold key
"BREAK_KEY",	-telnet break key
"COMPOSE_KEY",	-telnet compose key
"DO_KEY",	-telnet do key
"NULL_KEY",	-telnet null key
"PAGEUP_KEY",	-telnet page up key
"PAGEDOWN_KEY",	-telnet page down key
"REMOVE_KEY",	-telnet remove key
"END_KEY",	-telnet end key
"RETURN_KEY",	-telnet return key
"SOH_KEY",	-telnet SOH key
"STX_KEY",	-telnet STX key
"ETX_KEY",	-telnet ETX key
"EOT_KEY",	-telnet EOT key
"ENQ_KEY",	-telnet ENQ key
"ACK_KEY",	-telnet ACK key
"BEL_KEY",	-telnet BEL key
"HT_KEY",	-telnet HT key
"VT_KEY",	-telnet VT key
"FF_KEY",	-telnet FF key
"CR_KEY",	-telnet CR key
"SO_KEY",	-telnet SO key
"SI_KEY",	-telnet SI key
"DLE_KEY",	-telnet DLE key
"DC1_KEY",	-telnet DC1 key
"DC2_KEY",	-telnet DC2 key

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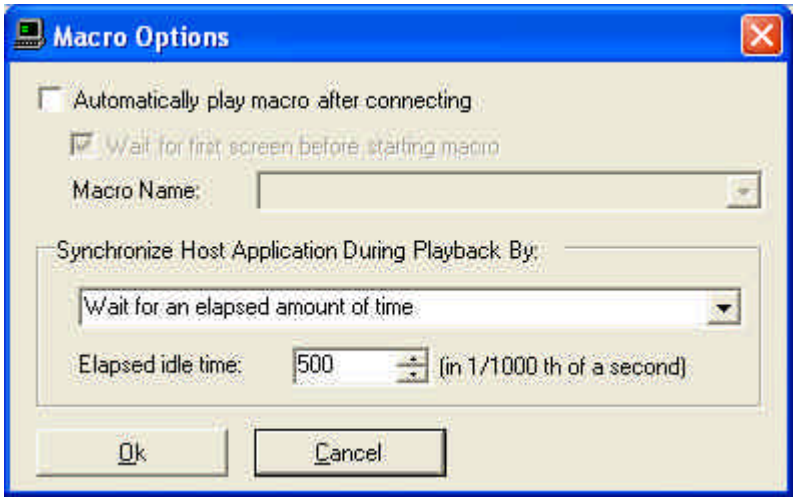
"DC3_KEY",	-telnet DC3 key
"DC4_KEY",	-telnet DC4 key
"NAK_KEY",	-telnet NAK key
"SYN_KEY",	-telnet SYN key
"ETB_KEY",	-telnet ETB key
"CAN_KEY",	-telnet CAN key
"EM_KEY",	-telnet BM key
"SUB_KEY",	-telnet SUB key
"FS_KEY",	-telnet FS key
"GS_KEY",	-telnet GS key
"RS_KEY",	-telnet RS key
"US_KEY",	-telnet US key

Delete

The Delete Macro function lets you delete macro files from your disk. Select the macro that you want to delete by using the mouse and pressing OK.

Options



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The synchronize host application option determines how the terminal session determines when the host has completely written the screen so that the next macro line may be played. Some host applications may write data to the screen a variable number of times after keyboard input. Two options exist for determining when the host has completed writing the screen: (1) Count the number of host screen updates or (2) wait for an elapsed amount of idle time. During the record phase, the number of times that the host writes to the display is counted and recorded into the macro. If you choose option 1 above, then as the macro is played back is it assumed that the host will write to the screen the same number of times before the macro continues to play after an enter action is performed. In the second case above, a timer is started after the host updates the screen and if this timer reaches the configurable time value and the keyboard is enabled, then the macro will continue. When configuring the idle timer, it is necessary to take into account the host response time and the speed of the physical connection to the host.

The “Automatically play macro after connecting” option lets you select a macro that will be played whenever a connection is made to the host.

Help

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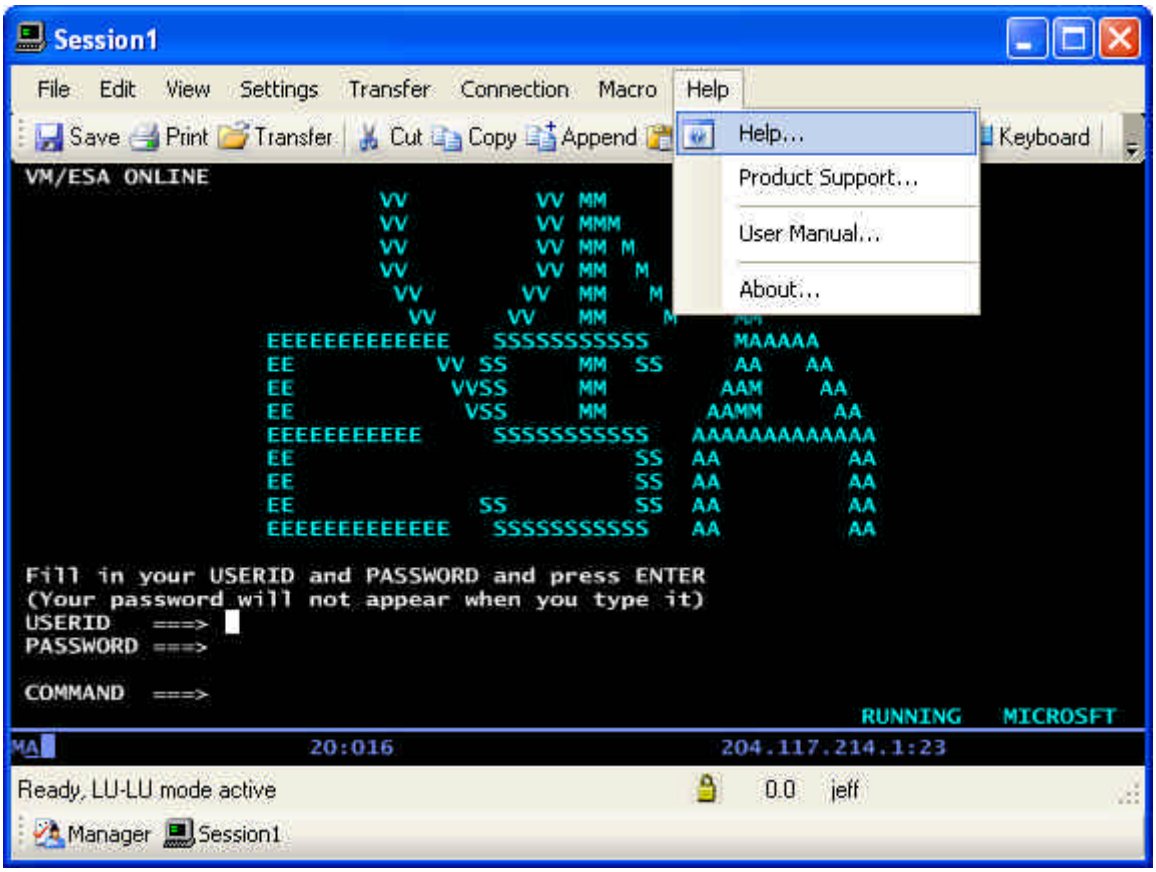

The Help Menu includes commands that enable you to obtain information about how to use the standard Windows Help facilities, as well as commands that enable you to access the major topics of help available for this particular application.

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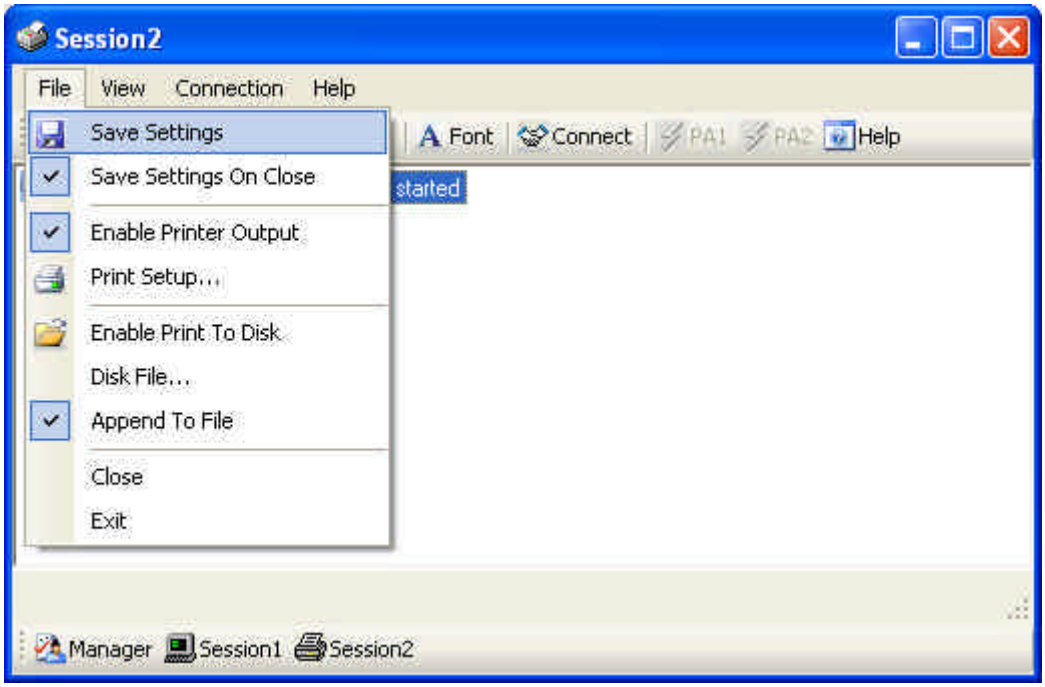
Printer Emulation

Printer emulation provides the ability to print host documents directly to a Windows printer or text file. The printer emulation window connects to the host over TCP/IP and may be configured to emulate a variety of different IBM printer models.

File



Save Settings

This File menu command is used to store the current session profile. All the operational and connection options currently in effect will automatically be re-activated next time the session is started. The settings are saved in the .NET isolated storage. Each time a printer session is launched, it compares the

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date/time of the isolated storage settings with the session settings in the Blues database and uses the most recently saved version.

Save Settings On Close

This option may be enabled or disabled by selecting it. If it is enabled, then the terminal session will automatically save its settings when it is closed.

Enable Printer Output

This feature lets you turn on and off printer output whenever a print function is done. If this option is enabled, then this menu item will be checked. This option pertains to a local print function caused by pressing the print screen key or print screen menu item.

Print Setup

This menu item displays a dialog box that lets you configure how a host print will be printed.

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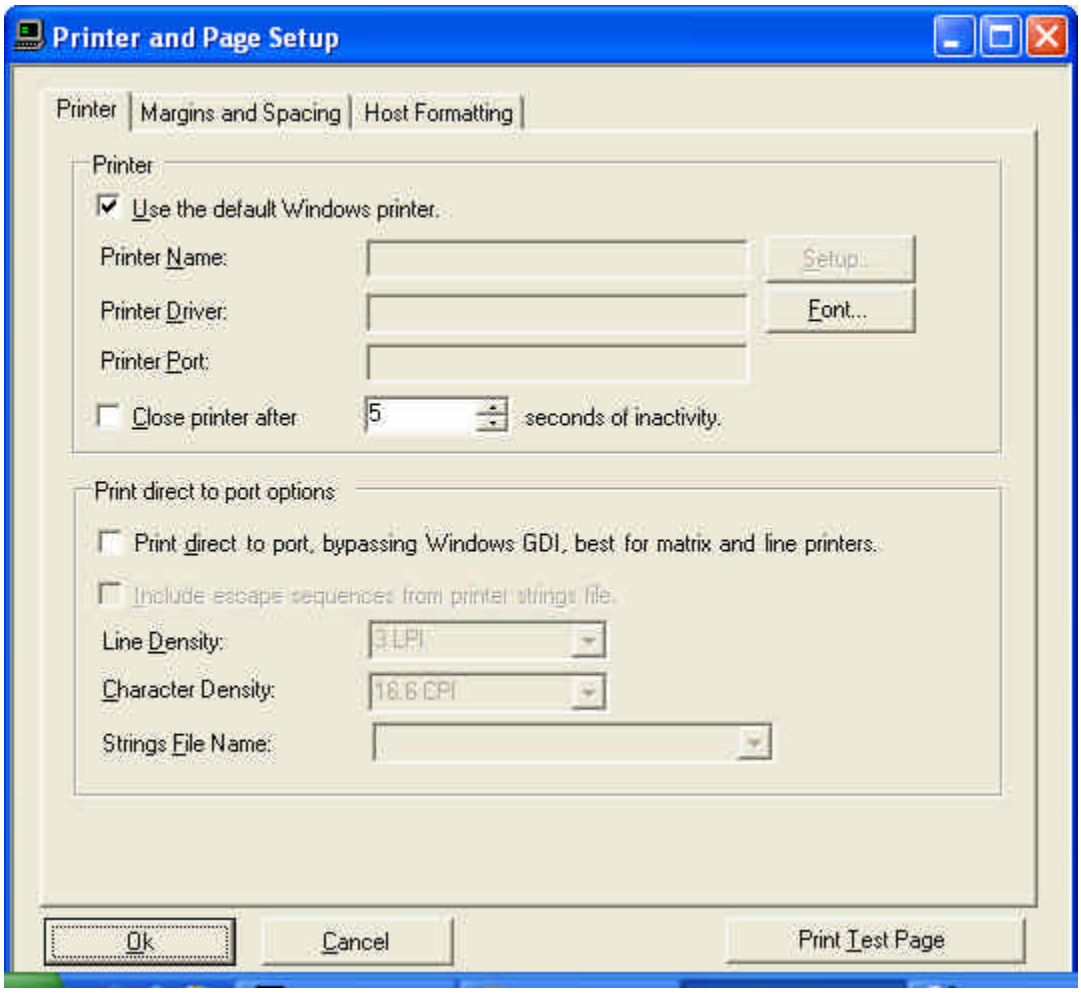

Setup…

The printer selection and setup button allow the selection of a print device. The print device receives the host output.

Fonts…

The Fonts button lets you select the font that you want to use for your host print. The fonts dialog box lets you select any available printer fonts you have installed. Once your font has been selected, the maximum print column, last print line, and lines per page variables are automatically calculated for you.

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Close Printer After

This option may be selected to cause the printer spooler or printer port to be closed if no host data is received within the time period specified. This feature may be necessary for LU type 3 printer output or for an LU type 1 printer that is not configured for between bracket printer sharing at the host. If more data is received after the time out was reached, the new data will be printed on the top of a new page.

Print Direct To Port

This feature lets you bypass the windows print manager and print directly to a port like LPT1. If you select this feature, you may configure printer strings to customize your printer output. Another use for this feature is if your host print output is already in print ready format, then the emulator will pass it directly to the printer.

Include Printer Escapes In Output

When this option is selected, the escape sequences defined in the printer strings file are added to the output port.

Line Density

This field is only visible when you have selected print directly to port. This field specifies the number of lines per inch (LPI) to be printed. You may choose 4, 6, or 8 lines per inch. The number selected will cause the appropriate printer string to be sent to the print device at the start of a print job.

Character Density

This field is only visible when you have selected print directly to port. This field specifies the number of characters per inch (CPI) to be printed. You may choose between 6, 10, 12, 16.6, or 20 characters per inch. The number selected

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will cause the appropriate printer string to be sent to the print device at the start of a print job.

Strings File Name

This field is only visible when you have selected print directly to port. A printer strings file contains escape sequences that are sent to the printer to perform special printing functions. Creating a strings file is an advanced function and not normally needed. A strings file is only needed if there is no other way of configuring the printer to generate the correct page format.

NOTE TO HEWLETT-PACKARD LASERJET II USERS - If you are trying to configure a HEWLETT-PACKARD LaserJet II printer or an HP II compatible, then you should select the strings file named 'HPLJII.LU1' . This file is a sample strings file for Hewlet Packard LaserJet compatible printers.

To perform the printer string configuration, you will need a copy of the manual that came with your printer. In this manual, you will find a section that lists all of the control strings that the printer will accept and what they do. These strings are known as escape sequences. The printer string configuration process allows you to supply the 3270 Printer program with the necessary escape sequences to be able to translate the host's print data stream to your printer's escape sequences.

Each printer string is preceded by a constant string that identifies it. Printer control strings consist of hexadecimal bytes and variables. Each entry is separated by a '-' character when it is displayed on the screen. Functions are defined for operations that require variables to replace them before they are sent to the output device. These variables are usually dependent upon the data stream sent from the host and the type of printer you have. For example, the host may want to set the top of page margin to row 5 and col 10. To do this the 3270 Printer program must know two things, (1) what escape sequence to use and (2) how to send the value (row 5 col 10) to the printer.

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The following lists contains all the possible PRINTER strings and their meanings:

FIRST INITIALIZATION STRING

This string is sent to the output device every time a new document is sent from the host. It may be used to setup any default parameters you may want the printer to take on, such as the default pitch.

SECOND INITIALIZATION STRING

This string is sent to the output device every time a new document is sent from the host. It is provided in case the FIRST INITIALIZATION STRING was not long enough to contain all the necessary information. It may be used to setup any default parameters you may want the printer to take on, such as the default pitch.

03 LINES PER INCH STRING

This string is sent to the output device whenever a command from the host is received that indicates to set the lines per inch to 3.

04 LINES PER INCH STRING

This string is sent to the output device whenever a command from the host is received that indicates to set the lines per inch to 4.

06 LINES PER INCH STRING

This string is sent to the output device whenever a command from the host is received that indicates to set the lines per inch to 6.

08 LINES PER INCH STRING

This string is sent to the output device whenever a command from the host is received that indicates to set the lines per inch to 8.

TOP MARGIN STRING

This string is sent to the output device when a command is received from the host that causes the top margin to be changed.

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BOTTOM MARGIN STRING

This string is sent to the output device when a command is received from the host that causes the bottom margin to be changed.

LEFT MARGIN STRING

This string is sent to the output device when a command is received from the host that causes the left margin to be changed.

RIGHT MARGIN STRING

This string is sent to the output device when a command is received from the host that causes the right margin to be changed.

PAGE WIDTH STRING

This string is sent to the output device when a command is received from the host that causes the page width to be changed.

HORIZONTAL FORMATTING STRING

This string is sent to the output device when a command is received from the host that causes the left margin, right margin, or page width to change. This string will be sent to the output device after the LEFT MARGIN, RIGHT MARGIN, and PAGE WIDTH strings. Some printers require a separate escape sequence to get the printer to activate the new margin settings.

HORIZONTAL SPACING CONSTANT

This printer specific is a decimal number that is used when host commands are received from the host that contain horizontal formatting information. This number is used as a multiplier for each host horizontal command. It may be used to adjust the distance between characters on a line.

PAGE LENGTH STRING

This string is sent to the output device whenever a host command is received that would change the page length.

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VERTICAL FORMATTING STRING

This string is sent to the output device when a command is received from the host that causes the top margin, bottom margin, or the page length to change. This string will be sent to the output device after the TOP MARGIN, BOTTOM MARGIN, and PAGE LENGTH strings. Some printers require a separate escape sequence to get the printer to activate the new margin settings.

VERTICAL SPACING CONSTANT

This printer specific is a decimal number that is used when host commands are received from the host that contain vertical formatting information. This number is used as a multiplier for each host vertical command. It may be used to adjust the distance between lines on a page.

START UNDERLINE STRING

This string is sent to the output device whenever a host command is received that indicates to start underlining.

END UNDERLINE STRING

This string is sent to the output device whenever a host command is received that indicates to end underlining.

RESET ATTRIBUTES STRING

This string is sent to the output device whenever a host command is received that indicates to reset all printer attributes.

DEFAULT FONT STRING

This string is sent to the output device whenever a host command is received that

Specifies to set the font back to its original setting.

FONT 1 STRING

This string is sent to the output device whenever a host command is received that indicates to set the font to type number 1.

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FONT 2 STRING

This string is sent to the output device whenever a host command is received that indicates to set the font to type number 2.

FONT 3 STRING

This string is sent to the output device whenever a host command is received that indicates to set the font to type number 3.

FONT 4 STRING

This string is sent to the output device whenever a host command is received that indicates to set the font to type number 4.

FONT 5 STRING

This string is sent to the output device whenever a host command is received that indicates to set the font to type number 5.

DEFAULT CHARACTERS PER INCH

This printer specific is a decimal number that selects the printers default characters per inch. Whenever the printer emulator goes back to the default characters per inch, this value determines which of the CHARS. PER INCH strings are sent to the output device (see CHARS. PER INCH strings below).

CHARS. PER INCH (1 - 7) STRING

This string is sent to the output device whenever a host command is received that indicates to set the characters per inch between 1 and 7.

CHARS. PER INCH (8 - 11) STRING

This string is sent to the output device whenever a host command is received that indicates to set the characters per inch between 8 and 11.

CHARS. PER INCH (12 - 14) STRING

This string is sent to the output device whenever a host command is received that indicates to set the characters per inch between 12 and 14.

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CHARS. PER INCH (15 - 18) STRING

This string is sent to the output device whenever a host command is received that indicates to set the characters per inch between 15 and 18.

CHARS. PER INCH (19 - 25) STRING

This string is sent to the output device whenever a host command is received that indicates to set the characters per inch between 19 and 25.

DEFAULT LINES PER PAGE

This printer specific is a decimal number that indicates the number of lines on a physical page.

There are six format variables kept by the LU1 SCS mode emulation program that the host may change at any time. These variables may be included in the strings in either an ASCII format or a binary format. These six variables may be placed into output strings sent the print device. Variables are used to indicate to insert the value of a particular variable in the output string. Variables are entered as a string of characters in the following format "VaAb" or "VaBb". The value of 'a' is the number of the variable to insert into the printer output (as defined below). The value 'A" is for ASCII and the 'B' is for BINARY. The value for 'b' is the minimum number of characters to send to the output device or a 0 to send the value without justification. The value for 'b' is used to right justify a value if ASCII is selected and used to add to the value if binary is selected. For example if you wanted to send the value for the right margin in ASCII and the host had set the right margin at 132 and you entered "V3A0" then the string "132" would be sent to the output device. If you entered the string "V3B0", then a single binary character of 132 would be sent to the output device. If you entered a string of "V3A5", then the string "00132" would be sent to the output device. The following variables have been assigned the following numbers:

VARIABLE	**VALUE**
PAGE WIDTH1	1
LEFT MARGIN	2
RIGHT MARGIN	3
PAGE LENGTH	5
TOP MARGIN	6
BOTTOM MARGIN	7

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Margins

Margins may be selected if the print directly to port feature has been disabled. Margins are initially set to 0 but may be modified as needed.

First Print Line
This field specifies the top margin, or first line on a page to which output data should be written. Any values greater that 1 will cause blank lines to be inserted in the print out.

Last Print Line

This field specifies the bottom margin, or last line on a page to which output data should be written. When the last print line is reached a form feed is performed.

Lines Per Page

This field specifies the total number of lines on a physical page.

Maximum Print Column

This field specifies the number of characters that can be printed on a line.

Space Between Lines

This field lets you modify the amount of space between printed lines. It is primarily used to align pre-printed forms. By using the TEST button you can experiment with the format of a printed page.

Space Between Characters

This field lets you modify the amount of space between printed characters. It is primarily used to align pre-printed forms. By using the TEST button you can experiment with the format of a printed page.

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SCS Transparent Print Data

SCS type of printers can receive data from the host that has been designated as transparent by the host. This option lets you select what the BLUES printer session will do with the transparent data. The transparent data may be sent directly to the print device (if you selected to print directly to the print port) or sent directly to the printer by using a Windows PASSTHROUGH escape function. All Windows print drivers do not support the PASSTHROUGH escape.

Hex Pass-Through Trigger Character

This option lets you select a special character or characters that will surround special print ready data coming from the host. Every two bytes between the trigger characters are converted from EBCDIC to ANSI, and then the ANSI characters are assumed to be valid hexadecimal values and combined to become a single hexadecimal character. The newly formed hexadecimal character is then either sent directly to the print device (if you selected to print directly to the print port) or sent directly to the printer by using a Windows PASSTHROUGH escape function. All Windows drivers do not support the PASSTHROUGH escape. The following DataStream could be sent from the host to a HP II compatible printer to set the line spacing to 8 LPI. It is assumed that you selected the logical not character as the trigger character, the logical not character is sent as a hex 5f from the host.

HOST EBCDIC DATA STREAM	OUTPUT TO THE PRINTER
5F 5F F1 C2 F2 F6 F6 C3 F3 F8 F4 F4 5F	1B 26 6C 38 44

Wrap Text At Right Margin

This lets you cause a new line to be automatically done whenever the right margin is reached. If this feature is off and the host prints past the right margin, then the information will be lost.

Form Feed Without Space

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This field acts as a toggle switch. An X in this field turns the option on, and means the printer should NOT advance one character position after a form feed. The one space advance is provided when needed to conform to IBM printers.

Form feed at end of job

This field acts as a toggle switch. An X in this field turns the option on, and means the printer should perform a form feed after printing each file. Some laser printers require this feature to be able to cause the printer to actually print the last page. If the host application does not place a form feed at the end of a print job, then this feature should be used.

Auto newline at end of line

This field acts as a toggle switch. An X in this field turns the option on, and means the printer should perform a newline function, i.e., carriage return (CR) followed by line feed (LF), whenever a CR occurs at the maximum print column + 1.

Additional newline at end of line

This field acts as a toggle switch. An X in this field turns the option on, and means the printer should perform two newline (NL) functions, whenever a NL occurs at the maximum print column + 1.

Newline at end of job

This field acts as a toggle switch. An X in this field turns the option on, and means the printer should perform a newline function after printing each file.

Xlate SCS FF to CRLF

This field acts as a toggle switch. An X in this field turns the option on, and means the printer should treat a form feed (FF) received from the host as a carriage return plus line feed (CRLF).

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Let Host Override these settings

The host DataStream may contain formatting options that set the maximum print position, the maximum print line, vertical tabs, the lines per inch, and the characters per inch. When this option has been selected, the BLUES printer emulator will use the values sent by the host and not the values have selected in the print setup dialog box.

Enable Print To Disk

This menu item lets you enable and disable the print to disk feature. When selected, each host print job is written to a new disk file. To select the disk file name, see the following section. You may have both disk and printer output enabled at the same time. This would cause a hard copy and a disk file to be produced.

Disk File…

This menu item lets you select the name of the next print to disk file name. Each host print is written to a new disk file. Disk files are incremented. I.e. print0001.dat is incremented to print0002.dat.

Close

This menu item lets you end the printer emulation.

View

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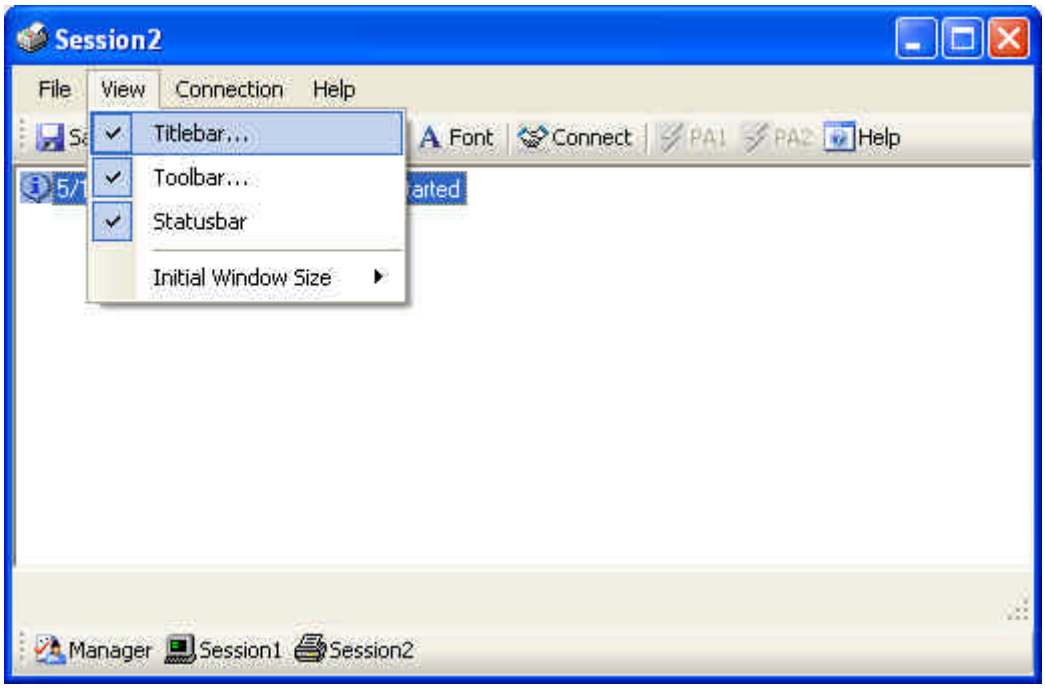

Titlebar…

This command may be used to remove or display the title bar at the top of the window. In addition, the title bar text may be changed to something more meaningful. If the title bar text field is left blank, then the session number will be displayed. I.e. Session1

Toolbar

This command will display or hide the printer session toolbar.

Statusbar

This command will either remove or add the status bar from the bottom of the display window.

Connection

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The Connection Menu provides a command that enables you to connect or disconnect to a host gateway.

Connect…

This option lets you connect to the host computer. For details on the operation of the connect window, see the Terminal Connect section of this manual.

Disconnect

Help

The Help Menu includes commands that enable you to obtain information about how to use the standard Windows Help facilities, as well as commands that enable you to access the major topics of help available for this particular application.

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Software Development Kit

What Is It ?

The SDK (Software Development Kit) contains the necessary .NET components to add IBM 3270 and IBM 5250 terminal emulation to any .NET application. The Windows Forms control “HostControl” can be dropped into any .NET Windows form to provide a managed .net terminal emulator. In addition to providing standard terminal emulation, the hosting .NET application can use the rich set of methods, properties, and events to automate overator entry, scrape screens, present an entirly different Graphical interface of the host information, or seamlessly integrate information from an IBM Mainframe or Midrange computer with their custom application.

The SDK comes as part of the “Blues 2006 Client” and “Blues 2006 Developer” products.

Blues 2006 may be used to create custom .NET applications that can have one or more embedded Blues terminal sessions. Blues 2006 ships with a Windows Forms control that can be dropped into any .NET application. The control provides a complete terminal emulation window that may be used to automate operator activity as well as extend the functionality of the emulator. To use the control, you must be experienced in creating .NET application and programming in .NET. This chapter assumes that the reader be versed in both.

The Software Development Kit (SDK) includes two Microsoft Visual Studio .NET 2006 sample projects; one written in C# and the other in VB .NET.

The sample projects are installed under the SDK folder (defaults to Program Files\Blues2006\sdk\VB and Program Files\Blues2006\sdk\c#). There are two approaches to using the control; start with the sample project and add your new functionality, or add the control to your existing application.

The file hostcontrol.dll contains the .NET Windows forms control used for terminal emulation. This control contains a variety of properties, methods and delegates that may be used to control the operation of a terminal session. Some

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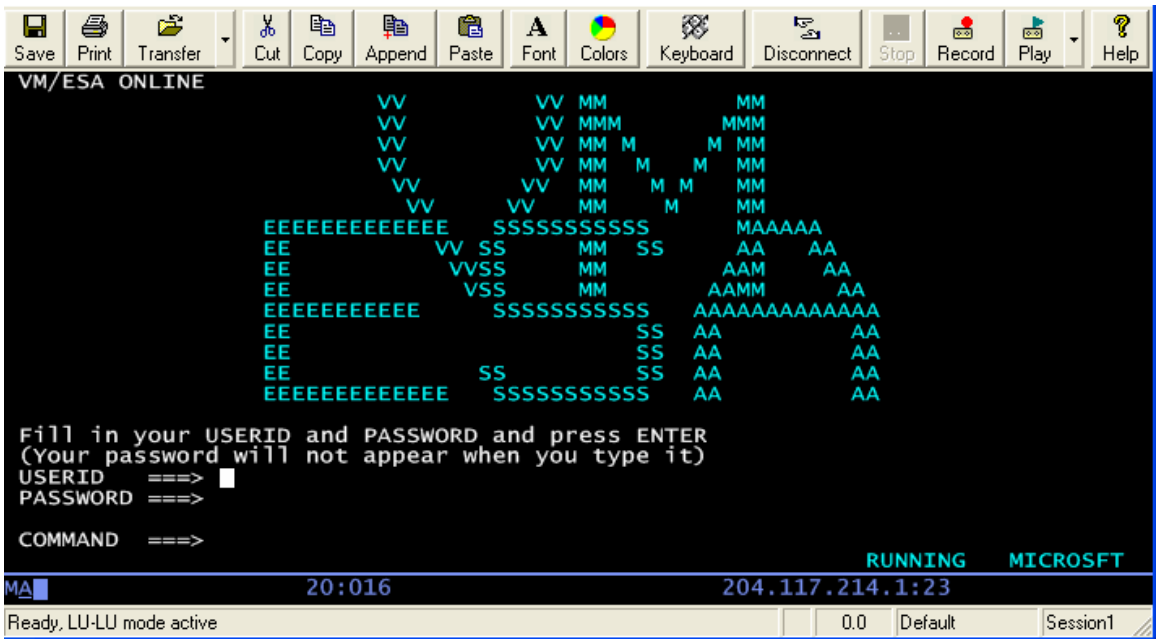
of the functions include automated keyboard entry, screen scraping, connecting, and disconnecting.

The control appears as a rectangular window with a toolbar, host presentation space, button bars, and status bar. Its appearance may be configured to match specific requirements.



Licensing Issues

Any third party application that uses the Blues software must be properly licensed. Each PC running any part of the Blues software must be licensed. For information on the software license, please read the license agreement that must be agreed to during the initial software installation process.

Packaging Blues with a Third Party Application

Licensing issues still apply if the Blues software is going to be packaged with any third party application. Each computer running the third party application that is using the Blues software must be properly licensed.

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To package Blues with a third party application, first, install Blues on the development PC, configure the session(s) from the Blues Manager window the way you want them, develop the application and test it, and then include all the files in the Blues folder with your application.

Sample Project Usage

To use the sample projects installed with Blues, Visual Studio .NET 2006 or the .NET SDK must already be installed on the PC used for development. It is suggested that a copy of all files in the appropriate sample folder be copied to a new folder to preserve the sample for reference purposes. To build a project, first start Visual Studio .NET 2006 and use the Open Project function and browse to the project folder, and select the project to open. Once the project is opened, you may have to adjust the location of the references to match the folder where Blues is installed and adjust the location where the compiled program is written to match the Blues folder.

Once you are able to build and run the project with no errors, then your ready to add new functionality by using the methods, properties, and delegates of the hostcontrol class.

Adding Hostcontrol to an existing Visual Studio project

Important

Before adding the control to an existing application it is important to understand how the .NET runtime locates assemblies (.NET dll's) that are referenced by another application. Typically all .NET dlls that an application requires are located in either the same folder as the application, or in the .NET Global Cache (GAC). We recommend either copying all the files from the Blues 2006 installation folder (Program Files\Blues2006) to the same folder that the hosting application is in, or by adding an event handler for the System.AppDomain.CurrentDomain.AssemblyResolve event that loads the Blues 2006 dlls from the installation folder as they are required. We do not recommend puting the Blues 2006 dlls in the GAC, the Blues 2006 dll's

assume that all necessary files required to use the control (translate table files, keyboard mapping files, file transfer schemes, etc) are located in the same folder as the dlls themselves. When a file is added to the GAC, it is copied to a special Windows folder where it is loaded from, this causes the control to fail because to necessary supporting files are not in the GAC folder.

To add a terminal session control to your application from visual studio, follow these steps:

1. Right click on the "References" tree in the Solution window and select "Add Reference". Browse to either the Program Files\Blues 2006 folder (if leaving Blues 2006 product in its installation folder), or the the folder where your exe is put when it is built (if copied all Blues 2006 files to the application folder) and click on the file Hostcontrol.dll and press ok. Right click on the new reference and select Properties. From the properties window set the "Local Copy" property to **false.**
2. Open up the toolbox (View/Toolbox menu), click the right mouse button over an unused area of the toolbox window and select "Add/Remove Items…". Browse to either the Program Files\Blues 2006 folder (if leaving Blues 2006 product in its installation folder), or the the folder where your exe is put when it is built (if copied all Blues 2006 files to the application folder) and click on the file Hostcontrol.dll and press ok. This will create a new tool at the end of the "Windows Forms" tab tools called BluesTerminal.
3. Select the BluesTerminal tool and edit the form that you want the terminal session on and click the mouse on the form. This will create a Bluesterminal control that looks like a black rectangle. This is the area where the terminal session will be visible (if the Visible property is true).
4. If the Blues 2006 product is going to be run from its installation folder, add an event handler to the System.AppDomain.CurrentDomain.AssemblyResolve as follows:

   See Also http://support.microsoft.com/default.aspx?scid=kb;en-us;837908#6

   Visual C# .NET code

```
static void Main()
{
      //
```

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```
                  // Hook the ResolveEvent to allow loading of Blues
                  // assemblies from its installed location
                  //
                  System.AppDomain.CurrentDomain.AssemblyResolve +=new
ResolveEventHandler(CurrentDomain_AssemblyResolve);


                  Application.Run(new Form1());
            }
            private static System.Reflection.Assembly
CurrentDomain_AssemblyResolve(object sender, ResolveEventArgs args)
            {
                  //
                  // Location where Blues software is installed
                  //
                  string BluesFolder = "C:\\Program Files\\Blues2006\\";

                  if(args.Name.StartsWith("HostControl"))

      return(System.Reflection.Assembly.LoadFrom(BluesFolder +
"Hostcontrol.dll"));
                  else
                  if(args.Name.StartsWith("PS"))

      return(System.Reflection.Assembly.LoadFrom(BluesFolder +
"PS.dll"));
                  else
                  if(args.Name.StartsWith("DS3270"))

      return(System.Reflection.Assembly.LoadFrom(BluesFolder +
"DS3270.dll"));
                  else
                  if(args.Name.StartsWith("DS5250"))

      return(System.Reflection.Assembly.LoadFrom(BluesFolder +
"DS5250.dll"));
                  else
                  if(args.Name.StartsWith("VW5250"))

      return(System.Reflection.Assembly.LoadFrom(BluesFolder +
"VW5250.dll"));
                  else
                  if(args.Name.StartsWith("VW3270"))

      return(System.Reflection.Assembly.LoadFrom(BluesFolder +
"VW3270.dll"));
                  else
                  if(args.Name.StartsWith("Dialogs"))

      return(System.Reflection.Assembly.LoadFrom(BluesFolder +
"Dialogs.dll"));
                  else
                  if(args.Name.StartsWith("Licensing"))

      return(System.Reflection.Assembly.LoadFrom(BluesFolder +
"Licensing.dll"));
                  else
                  if(args.Name.StartsWith("Xfer"))
```

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```
      return(System.Reflection.Assembly.LoadFrom(BluesFolder +
"Xfer.dll"));
                  else
                  if(args.Name.StartsWith("Macro"))

      return(System.Reflection.Assembly.LoadFrom(BluesFolder +
"Macro.dll"));
                  else
                  if(args.Name.StartsWith("tn"))

      return(System.Reflection.Assembly.LoadFrom(BluesFolder +
"tn.dll"));
                  else
                  if(args.Name.StartsWith("cbase"))

      return(System.Reflection.Assembly.LoadFrom(BluesFolder +
"cbase.dll"));
                  if(args.Name.StartsWith("Enums"))

      return(System.Reflection.Assembly.LoadFrom(BluesFolder +
"Enums.dll"));
                  else
                  if(args.Name.StartsWith("DES3"))

      return(System.Reflection.Assembly.LoadFrom(BluesFolder +
"Des3.dll"));
                  else
                  if(args.Name.StartsWith("Xheo.Licensing"))

      return(System.Reflection.Assembly.LoadFrom(BluesFolder +
"Xheo.Licensing.dll"));
                  else
                  if(args.Name.StartsWith("kcommon"))

      return(System.Reflection.Assembly.LoadFrom(BluesFolder +
"kcommon.dll"));
                  else
                  if(args.Name.StartsWith("win32calls"))

      return(System.Reflection.Assembly.LoadFrom(BluesFolder +
"win32calls.dll"));
                  else
                  if(args.Name.StartsWith("en"))

      return(System.Reflection.Assembly.LoadFrom(BluesFolder +
"en.dll"));
                  else
                  if(args.Name.StartsWith("de"))

      return(System.Reflection.Assembly.LoadFrom(BluesFolder +
"de.dll"));
                  return null;
            }
```

Visual Basic .NET code

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```
    Public Sub New()
        MyBase.New()

        AddHandler AppDomain.CurrentDomain.AssemblyResolve, AddressOf
MyResolveEventHandler

        'This call is required by the Windows Form Designer.
        InitializeComponent()

        'Add any initialization after the InitializeComponent() call

    End Sub


    Shared BluesFolder As String = "C:\\Program Files\\Blues2006\\"

    Function MyResolveEventHandler(ByVal sender As Object, ByVal args As
ResolveEventArgs) As System.Reflection.Assembly


        If (args.Name.StartsWith("HostControl")) Then
            Return System.Reflection.Assembly.LoadFrom(BluesFolder +
"Hostcontrol.dll")
        ElseIf (args.Name.StartsWith("PS")) Then
            Return System.Reflection.Assembly.LoadFrom(BluesFolder +
"PS.dll")
        ElseIf (args.Name.StartsWith("DS3270")) Then
            Return System.Reflection.Assembly.LoadFrom(BluesFolder +
"DS3270.dll")
        ElseIf (args.Name.StartsWith("DS5250")) Then
            Return System.Reflection.Assembly.LoadFrom(BluesFolder +
"DS5250.dll")
        ElseIf (args.Name.StartsWith("VW5250")) Then
            Return System.Reflection.Assembly.LoadFrom(BluesFolder +
"VW5250.dll")
        ElseIf (args.Name.StartsWith("VW3270")) Then
            Return System.Reflection.Assembly.LoadFrom(BluesFolder +
"VW3270.dll")
        ElseIf (args.Name.StartsWith("Licensing")) Then
            Return System.Reflection.Assembly.LoadFrom(BluesFolder +
"Licensing.dll")
        ElseIf (args.Name.StartsWith("Xfer")) Then
            Return System.Reflection.Assembly.LoadFrom(BluesFolder +
"Xfer.dll")
        ElseIf (args.Name.StartsWith("Macro")) Then
            Return System.Reflection.Assembly.LoadFrom(BluesFolder +
"Macro.dll")
        ElseIf (args.Name.StartsWith("tn")) Then
            Return System.Reflection.Assembly.LoadFrom(BluesFolder +
"tn.dll")
        ElseIf (args.Name.StartsWith("cbase")) Then
            Return System.Reflection.Assembly.LoadFrom(BluesFolder +
"cbase.dll")
        ElseIf (args.Name.StartsWith("Enums")) Then
            Return System.Reflection.Assembly.LoadFrom(BluesFolder +
"Enums.dll")
        ElseIf (args.Name.StartsWith("DES3")) Then
```

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```
            Return System.Reflection.Assembly.LoadFrom(BluesFolder +
"DES3.dll")
        ElseIf (args.Name.StartsWith("Xheo.Licensing")) Then
            Return System.Reflection.Assembly.LoadFrom(BluesFolder +
"Xheo.Licensing.dll")
        ElseIf (args.Name.StartsWith("kcommon")) Then
            Return System.Reflection.Assembly.LoadFrom(BluesFolder +
"kcommon.dll")
        ElseIf (args.Name.StartsWith("win32calls")) Then
            Return System.Reflection.Assembly.LoadFrom(BluesFolder +
"win32calls.dll")
        ElseIf (args.Name.StartsWith("en")) Then
            Return System.Reflection.Assembly.LoadFrom(BluesFolder +
"en.dll")
        ElseIf (args.Name.StartsWith("de")) Then
            Return System.Reflection.Assembly.LoadFrom(BluesFolder +
"de.dll")

        End If

    End Function 'MyResolveEventHandler
```

5. Locate and click on the “BluesTerminal” tool in the Visual Studio toolbox under the “Windows Forms” tab. Open a form that will hold the terminal session and click the mouse over the form. This will create a rectangle control that will provide the emulation.
6. Add an event handler for the forms Load event and call the Readconfiguration and Launch methods in the OnLoad event.

Visual C# .NET code

```
      private void Form1_Load(object sender, System.EventArgs e)
      {
            this.bluesTerminal1.ReadConfiguration();
            this.bluesTerminal1.Launch();
      }
```

Visual Basic .NET code

```
      Private Sub Form1_Load(ByVal sender As Object, ByVal e As
System.EventArgs) Handles MyBase.Load

            BluesTerminal1.ReadConfiguration()
            BluesTerminal1.Launch()


      End Sub
```

HostControl Class

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The HostControl.BluesTerminal class provides the interface to the terminal emulation window. The class must be properly initialized before any host interaction can take place. Each instance of the BluesTerminal class represents an instance of a terminal emulator.

The class definition is as follows:

C#

```
private HostControl.BluesTerminal bluesTerminal1;
```

VB

```
Friend WithEvents BluesTerminal1 As HostControl. BluesTerminal
```

Initialization

Initialization consists of constructing an instance of the class, setting a few properties, calling the ReadConfiguration method to configure the class, and calling the Launch method to start the emulation. The Blues Manager window must be used to first configure a session for the class to use. This allows for the customization of the session, keyboard mappings, etc. Each instance of the class is represented by a specific session configured with the Manager window. Multiple instances of a class session are allowed. After initialization, any of the methods, properties, or delegates may be used to control the terminal session, consult the reference in this manual for details on each.

Initialization of the class looks as follows; consult the reference in this manual for definitions of each method, property, and delegate.

C#

```
bluesTerminal1 = new HostControl.BluesTerminal();

if(!this.bluesTerminal1.ReadConfiguration())
{
```

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```
        // Configuration failed, view bluesTerminal1. Message
        return;
}
if(!this.bluesTerminal1.Launch())
{
        //Launch failed, view bluesTerminal1. Message
        return;
}
```

VB

```
        BluesTerminal1 = New HostControl.BluesTerminal
        If Not BluesTerminal1.ReadConfiguration() Then
          ‘ Error view BluesTerminal1.Message
        End If

        If Not BluesTerminal1.Launch() Then
                ‘ Error view BluesTerminal1.Message
        End If
```

Methods

Methods are functions that the application calls to have some type of function performed. Any method that can take time to complete is asynchronous and return immediately, when the method has been performed, the associated delegate is called to notify the application of the outcome.

BeginConnect

This method starts the connection process. Before calling this method, set the delegate evtConnected to be notified of the result. The connection process is asynchronous. See the delegate evtConnected for details on determining the outcome of the call.

C#

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```
bluesTerminal1.evtConnectComplete += new
BluesTerminal.evtConnected(bluesTerminal1_evtConnectComplete);

bluesTerminal1.BeginConnect();
```

VB

```
BluesTerminal1.BeginConnect();
```

Close

This method closes the control and frees up any resources it may be using.

C#

```
BluesTerminal1.Close();
```

VB

```
BluesTerminal1.Close()
```

ClosingWindow

This method should be called when the application is about to close. This method allows the terminal session to clean up any resources it may be using, save its settings (if configured to Save Settings On Close), and disconnect from the host.

C#

```
BluesTerminal1.ClosingWindow();
```

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VB

BluesTerminal1. ClosingWindow ()

ConnectToDestination

This method causes the terminal session to start the connection process. Each session may be configured for more that one host destination. This method may be used to connect to a specific previously configured host destination. The argument is a one based value indicating which host destination to attempt to connect to.

C#

BluesTerminal1.ConnectToDestination (1);

VB

BluesTerminal1. ConnectToDestination (1)

DisconnectFromHost

This method will cause the terminal session disconnect the tcp/ip connect to the host and enter “local” mode.

C#

BluesTerminal1.DisconectFromHost ();

VB

BluesTerminal1. DisconectFromHost ()

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findDisplayText

This method is used to search for a string on the host screen. The arguments include the string, the starting row and the starting column. The starting row and column are one based numbers. The search is exhausted at the end of the screen. If the string is found, true is returned, other false is returned. If the string is found, the found foundTextOnRow and foundTextOnColumn properties will contain the location of the string.

C#

```
If(BluesTerminal1.findDisplayText(“Login”,1,1))
{
        // text was found at BluesTerminal1. foundTextOnRow,
        // BluesTerminal1.foundTextOnColumn
}
```

VB

```
If (BluesTerminal1.findDisplayText("Login", 1, 1)) Then
   REM text is located at
BluesTerminal1.foundTextOnRow,Bluesterminal1.foundTextOcColumn

End If
```

getDisplayText

This method obtains a copy of the host screen (scrapes the screen). Any portion of the screen contents may be read. Arguments include the starting row, column, and length. All argument values are one based.

C#

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```
//
// scrape screen and take appropriate action
//
string Screen = BluesTerminal1.getDisplayText(1,1,
BluesTerminal1.ScreenRows * BluesTerminal1.ScreenCols);
```

VB

```
REM
REM scrape screen and take appropriate action
REM
Dim Screen As String
Screen = BluesTerminal1.getDisplayText(1, 1, BluesTerminal1.ScreenRows *
BluesTerminal1.ScreenCols)
```

keyText

This method is used to type a string of characters into the host screen. The characters are entered starting at the current cursor address.

The return code is true for success and false for failure. A False return code indicates that the either the host screen was busy receiving data from the host, or that the cursor was located in a protected location of the screen.

C#

```
BluesTerminal1.keyText("hello World");  //enter some text
```

VB

```
BluesTerminal1.keyText("hello world")  REM enter some text
```

keyTerminalKey

This method is used to send a function key to the terminal session. Function keys are special keys that cause a specific function to be performed by the terminal session. **Some function keys cause the terminal session to send**

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information to the host. When this happens, the application must wait for a delegate such as the evtKeyboardUnlocked before any other keyboard input is allowed.

Two prototypes of this function exist, one that takes a key code, and the other that takes a text representation of the key. The dll Enums.dll contains an Enum called KeyDefines that contains the integer values for the key codes. The following table lists the possible values for the arguments:

Argument	**Function**
KeyDefines.KEY_DUPLICATE or “DUP” or “DUPLICATE”	3270 or 5250 Duplicate key
KeyDefines.PF1 or “PF1” or “F1”	3270 or 5250 Function key 1
KeyDefines.PF2 or “PF2” or “F2”	3270 or 5250 Function key 2
KeyDefines.PF3 or “PF3” or “F3”	3270 or 5250 Function key 3
KeyDefines.PF4 or “PF4” or “F4”	3270 or 5250 Function key 4
KeyDefines.PF5 or “PF5” or “F5”	3270 or 5250 Function key 5
KeyDefines.PF6 or “PF6” or “F6”	3270 or 5250 Function key 6
KeyDefiles.PF7 or “PF7” or “F7”	3270 or 5250 Function key 7
KeyDefines.PF8 or “PF8” or “F8”	3270 or 5250 Function key 8
KeyDefines.PF9 or “PF9” or “F9”	3270 or 5250 Function key 9
KeyDefines.PF10 or “PF10” or “F10”	3270 or 5250 Function key 10
KeyDefines.PF11 or “PF11” or “F11”	3270 or 5250 Function key 11
KeyDefines.PF12 or “PF12” or “F12”	3270 or 5250 Function key 12
KeyDefines.PF13 or “PF13” or “F13”	3270 or 5250 Function key 13
KeyDefines.PF14 or “PF14” or “F14”	3270 or 5250 Function key 14
KeyDefines.PF15 or “PF15” or “F15”	3270 or 5250 Function key 15

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KeyDefines.PF16 or “PF16” or “F16”	3270 or 5250 Function key 16
KeyDefines.PF17 or “PF17” or “F17”	3270 or 5250 Function key 17
KeyDefines.PF18 or “PF18” or “F18”	3270 or 5250 Function key 18
KeyDefines.PF19 or “PF19” or “F19”	3270 or 5250 Function key 19
KeyDefines.PF20 or “PF20” or “F20”	3270 or 5250 Function key 20
KeyDefines.PF21 or “PF21” or “F21”	3270 or 5250 Function key 21
KeyDefines.PF22 or “PF22” or “F22”	3270 or 5250 Function key 22
KeyDefines.PF23 or “PF23” or “F23”	3270 or 5250 Function key 24
KeyDefines.PF24 or “PF24” or “F24”	3270 or 5250 Function key 24
KeyDefines.PA1 or “PA1”	3270 or 5250 PA 1 Function key
KeyDefines.PA2 or “PA2”	3270 or 5250 PA 2 Function key
KeyDefines.PA3 or “PA3”	3270 or 5250 PA 3 Function key
KeyDefines.ENTER or “ENTER”	3270 or 5250 ENTER Function key
KeyDefiles.SYSREQ or “SYS_REQ” or “SYSTEM REQUEST”	3270 or 5250 System Request Function key
KeyDefines.TABFWD or “TAB”	3270 or 5250 Tab forward Function key
KeyDefines.BACKTAB or “BACKTAB”	3270 or 5250 Back TabFunction key
KeyDefines.NEWLINE or “NEWLINE” or “NEW LINE”	3270 or 5250 New LineFunction key
KeyDefines.CLEAR or “CLEAR”	3270 or 5250 Clear Screen Function key
KeyDefines.ALTCURSOR or “ALT_CURSOR” or “ALTERNATE CURSOR”	3270 or 5250 Alternate Cursor Function key
KeyDefines.ATTENTION or “ATTENTION”	3270 or 5250 Attendtion Function key
KeyDefines.CURSEL or “CUR_SEL” or “CURSOR SELECT”	3270 or 5250 Cursor Select Function key

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KeyDefines.ERASFLD or “ERASE_EOF” or “ERASE EOF”	3270 or 5250 Erase to end of field Function key
KeyDefines.ERASINP or “ERASE_INP” or “ERASE INPUT”	3270 or 5250 Erase Input Function key
KeyDefines.FIELD_MARKER or “FLD_MARK” or “FIELD MARK”	3270 or 5250 Field Mark Function key
KeyDefines.CURHOME or “HOME”	3270 or 5250 Home Function key
KeyDefines.CURLEFT or “CUR_LEFT” or “CURSOR_LEFT”	3270 or 5250 Cursor Left Function key
KeyDefines.CURRIGHT or “CUR_RIGHT” or “CURSOR RIGHT”	3270 or 5250 Cursor Right Function key
KeyDefines.RESETor “RESET”	3270 or 5250 Reset Function key
KeyDefines.CURUP or “KEYUP” or “CURSOR UP”	3270 or 5250 Cursor Up Function key
KeyDefines.CURDOWN or “KEYDOWN” or “CURSOR DOWN”	3270 or 5250 Cursor Down Function key
KeyDefines.BACKSPACE or “BACKSPACE”	3270 or 5250 Backspace Function key
KeyDefines.INSERT or “INSERT”	3270 or 5250 Insert Function key
KeyDefines.DELCHAR or “DELETE”	3270 or 5250 Delete Function key
KeyDefines.PRINT or “PRINT”	3270 or 5250 Print screen Function key
KeyDefines.FIELD_EXIT or “FIELD_EXIT” or “FIELD EXIT”	5250 Field Exit Function key
KeyDefines.FIELD_PLUS or “FIELD_PLUS” or “FIELD PLUS”	5250 Field Plus Function key
KeyDefines.FIELD_MINUS or “FIELD_MINUS” or “FIELD MINUS”	5250 Field Minus Function key
KeyDefines.ROLL_UP or “ROLL_UP” or “ROLL UP”	5250 Roll Up Function key
KeyDefines.ROLL_DOWN or “ROLL_DOWN” or “ROLL DOWN”	5250 Roll Down Function key
KeyDefines.HELP or “HELP”	5250 Help Function key
KeyDefines.PRINT_5250 or “HOST PRINT”	5250 Host Print Function key

C#

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```
BluesTerminal1.keyTerminalKey("ENTER");      //send enter key
```

or

```
BluesTerminal1.keyTerminalKey(HostControl.KEYDefines.ENTER);          //send enter key
```

VB

```
BluesTerminal1.keyTerminalKey("ENTER")  REM send enter key
```

or

```
BluesTerminal1.keyTerminalKey(HostControl.KEYDefines.ENTER)  REM send enter key
```

Launch

The Launch method preps the session for use. If the initially connected property is true, then the connection process is automatically started. Before calling this method set the Delegate evtConnected, if connection results need to be acted on.

The return code is true for success and false for failure. Inspect the Message property to determine the cause of any failure.

C#

```
if (!this.bluesTerminal1.ReadConfiguration())
{
   MessageBox.Show(this.bluesTerminal1.Message);
    this.Close();
}
else
        this.bluesTerminal1.Launch();
```

VB

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```
If (BluesTerminal1.ReadConfiguration()) Then
        BluesTerminal1.Launch()
Else
        MessageBox.Show(BluesTerminal1.Message)
        Close()
End If
```

mnuMacroPlay

This method will cause the play macro selection window to be displayed. The operator will then be forced to select the name of the macro to play. When the recording is complete, the evtMacroComplete delegate will be called.

mnuMacroRecord

This method is used to record a macro. The operator will be prompted for the name of the macro to record. When the recording is complete, the evtMacroComplete delegate will be called.

mnuMacroStop

This method is used to stop either playing a macro or recording a macro. Calling this method is only valid when a macro function is in progress.

PlayMacro

This method is used to play a specific macro file. The argument is the name of a previously recorded macro. When the macro completes, the evtMacroComplete delegate will be called to notify the application the macro has completed.

ReadConfiguration

The ReadConfiguration method forces the control to read the Blues database and establish its configuration settings. Before calling this method, the DATABASE, USERNAME, SESSIONNUMBER, LANGUAGE, and PRIVATEDIR properties must be set.

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The return code is true for success and false for failure. Inspect the Message property to determine the cause of any failure.

C#

```
if (!this.bluesTerminal1.ReadConfiguration())
{
        MessageBox.Show(this.bluesTerminal1.Message);
        this.Close();
}
else
        this.bluesTerminal1.Launch();
```

VB

```
If (BluesTerminal1.ReadConfiguration()) Then
        BluesTerminal1.Launch()
Else
        MessageBox.Show(BluesTerminal1.Message)
        Close()
End If
```

RecordMacro

This method is used to record a macro. The input argument is the name of a macro to record. If a previously recorded macro by the same name already exists, then it will be overwritten. When the recording is complete, the evtMacroComplete delegate will be called.

setIPAddress

This method is used to set the IP address for the session to connect to. The argument is a well-formed TCP/IP address in either the form a.b.c.d, or a string that is defined in a domain name server (like “localhost”). The terminal session should not be connected at the time this method is called. An application can dynamically connect to a host if the session is not configured for the “Automatically Connect To Host” option and have the application set the ip address, ip port, and call the BeginConnect method.

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C#

```
bluesTerminal1.setIPAddress("11.22.33.44");
```

VB

```
bluesTerminal1.setIPAddress("11.22.33.44")
```

setIPPort

This method may be used to set the tcp/ip port number used to connect to that host. The default value is for the telnet port is 23. The terminal session should not be connected at the time this method is called. An application can dynamically connect to a host if the session is not configured for the "Automatically Connect To Host" option and have the application set the ip address, ip port, and call the BeginConnect or ConnectToDestination method.

C#

```
bluesTerminal1.setIPPort("11.22.33.44");
```

VB

```
bluesTerminal1.setIPPort("11.22.33.44")
```

setCursor

This method may be used to set the input cursor to a specific row and column for subsequent operator input or keyText method calls. The arguments are one based values.

C#

```
BluesTerminal1.setCursor(2,5);    //set cursor to row 2 column 5
```

VB

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```
BluesTerminal1.setCursor(2, 5) REM set cursor to row 2 column 5
```

Properties

AppMenu

This property contains the MainMenu for the session. The MainMenu is the window menu that contains the session menu functions such as File, Edit, Macro, etc. The MainMenu is build during the initial configuration of the session and maintained by the HostControl class. If new macros are recorded or deleted, then the MainMenu is adjusted accordingly.

bHideTitle

This property is true if the control is to hide the main title bar for the Windows application. A value of false is the default and indicates that the title bar should be visible.

bHideMenu

This property is true if the control is to hide the main menu bar for the Windows application. A value of false is the default and indicates that the menu bar should be visible.

bTraceActive

This property turns the trace option on and off. When this option is enabled, a trace file named sessionx.trc is written, where x is the SESIONNUMBER property. The trace file is a text file that contains information for problem diagnosis.

HostCodePage

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This property determines what code page the host computer is using to transmit and receive screens of text in. This property will attempt to default to a compatable host code page of the executing computers language settings.

This property may be set to any valid EBCDIC_HOST_CODE_PAGES value. See BluesTerminal. EBCDIC_HOST_CODE_PAGES enumeration.

C#

```
Host.HostCodePage = BluesTerminal.EBCDIC_HOST_CODE_PAGES.
Germany_273_with_Euro;
```

VB

```
Host.HostCodePage = BluesTerminal.EBCDIC_HOST_CODE_PAGES.
Germany_273_with_Euro
```

DATABASE

The DATABASE property is the folder where the Blues database of user is located. The default value for this property is the same folder that the emulation was launched from. This property may be either a standard Windows path or a url if the Blues database resides on a web server.

EmulationType

This property determines the protocol type used for the TCPIP connection. The TN3270 protocol is selected for TN3270 and TN3270E connections to mainframe computers and TN5250 is selected for IBM AS400 connections. See the enumerator HostControl.EMULATIONTYPES for valid values.

C#

```
BluesTerminal1.EmulationType = (int)HostControl.EMULATIONTYPES.TN5250; //TN3270 or
TN5250
```

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VB

```
BluesTerminal1.EmulationType = HostControl.EMULATIONTYPES.TN5250
REM select  emulation type based on your type of host computer
```

foundTextOnRow

This property contains the row that a string was found on. This property is only valid after a successful findDisplayText or waitForDisplayString method has been done. The property is 1 based and may range from 1 to the number of rows in the host session screen.

C#

```
If(Host.FindDisplayText(“signon”,1,1))    //search screen for text
{
      // inspect foundTextOnRow and foundTextOnColumn to see
      // where it was found
      if(Host.foundTextOnRow == 8 && Host.foundTextOnColumn == 10)
      {
      }
}
```

VB

```
If (Host.findDisplayText("signon", 1, 1)) Then
    REM Inspect foundTextOnRow and foundTextOnColumn
    REM properties

      If (Host.foundTextOnRow = 2 And Host.foundTextOnColumn = 10) Then

      End If

End If
```

foundTextOnColumn

This property contains the column that a string was found on. This property is only valid after a successful findDisplayText or waitForDisplayString method has

been done. The property is 1 based and may range from 1 to the number of columns in the host session screen.

C#

```
If(Host.FindDisplayText(“signon”,1,1))    //search screen for text
{
      // inspect foundTextOnRow and foundTextOnColumn to see
      // where it was found
      if(Host.foundTextOnRow == 8 && Host.foundTextOnColumn == 10)
      {
      }
}
```

VB

```
If (Host.findDisplayText("signon", 1, 1)) Then
    REM Inspect foundTextOnRow and foundTextOnColumn
    REM properties

      If (Host.foundTextOnRow = 2 And Host.foundTextOnColumn = 10) Then

      End If

End If
```

IPAddress

This property is used to get or set the IP address for the session to connect to. The argument is a well-formed TCP/IP address in either the form a.b.c.d, or a string that is defined in a domain name server (like “localhost”). The terminal session should not be connected at the time this method is called. An application can dynamically connect to a host if the session is not configured for the “Automatically Connect To Host” option and have the application set the ip address, ip port, and call the BeginConnect method.

C#

```
Host.IPAddress = "217.110.154.85"; //IP address of the host
```

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VB

```
Host.IPAddress = "217.110.154.85" REM IP address of the host
```

IPPort

This property may be used to set the tcp/ip port number used to connect to that host. The default value is for the telnet port is 23. The terminal session should not be connected at the time this method is called. An application can dynamically connect to a host if the session is not configured for the "Automatically Connect To Host" option and have the application set the ip address, ip port, and call the BeginConnect or ConnectToDestination method.

C#

```
Host.IPPort = 23;       //default telnet port number is 23
```

VB

```
Host.IPPort = 23        REM default telnet port number is 23
```

ModelNumber

This property determines the type of IBM terminal that is emulated. Different model types have different numbers of rows and columns. Each model type has a default screen size and an alternate screen size. Either the default or alternate screen size is active as any given instant and is controlled by the host application. This means that the screen size can change at any time. The ScreenRows and ScreenCols properties contain the current number of rows and columns being used. See the enumerator BluesTerminal.MODELTYPE for the valid values of this property.

C#

```
Host.ModelNumber = (int)MODELS.MODEL_2;   //default 24 lines by 80
characters wide
```

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VB

```
Host.ModelNumber = HostControl.MODELS.MODEL_2  REM select model number,
it determines the number of rows and columns
```

isMdiContainer

This property informs the control if the controlling application is a multi document MDI application or a single document SDI application. Depending on the value, the menu system for the control is slightly different.

LANGUAGE

This property defines the native language that the control will present to the operator. The possible values are “US” and “GERMAN”, for English and German languages.

Message

This property contains an error message when an error occurs.

PlayingMacroNow

This property is true when a macro is being played.

RecordingMacroNow

This property is true when a macro is being recorded.

SaveSettingsOnClose

This property determines if the control should save its current settings before closing. If isolated storage is being used, then the session settings are saved in the users isolated storage.

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ScreenCols

This property contains the number of columns on the host screen area.

C#

```
//
// scrape screen and take appropriate action
//
string Screen = Host.getDisplayText(1,1,Host.ScreenRows *
Host.ScreenCols);
```

VB

```
REM
REM scrape screen and take appropriate action
REM
Dim Screen As String
Screen = Host.getDisplayText(1, 1, Host.ScreenRows * Host.ScreenCols)
```

ScreenRows

This property contains the number of rows on the host screen area.

C#

```
//
// scrape screen and take appropriate action
//
string Screen = Host.getDisplayText(1,1,Host.ScreenRows *
Host.ScreenCols);
```

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VB

```
REM
REM scrape screen and take appropriate action
REM
Dim Screen As String
Screen = Host.getDisplayText(1, 1, Host.ScreenRows * Host.ScreenCols)
```

SESSIONNUMBER

This property is the number of the session as configured by the Manager window.

Tag

This is an application defines standard control tag that may be used by the application to store information.

C#

Host.Tag = “My Special Tag”:

VB

Host.Tag = “My Special Tag”

TitleBarText
This property contains the string that is displayed to represent the session. If no string is configured, then the value of this property will be Sessionx (where x is the SESSIONNUMBER.

TraceActive

This property turns the trace option on and off. When this option is enabled, a trace file with the name in the property TraceFileName will be created.

C#

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```
Host.TraceActive = false;     //set to true to get a trace
```

VB

```
Host.TraceActive = False  REM set to true to cause a trace file to be
generated
```

TraceFileName

The name of the file to place tracing information into. This file is only created if the TraceActive property is set to True.

C#

```
Host.TraceFileName = "C:\\TRACEFILE.TXT";
```

VB

```
Host.TraceFileName = "C:\\TRACEFILE.TXT"
```

USERNAME

This property defines the name of the Blues user as defines by the Blues Manager window. The DATABASE, USERNAME, and SESSIONNUMBER properties together define which session settings that the control uses.

This property is used during the ReadConfiguration and mnuFileSave methods are called to access the correct configuration information for the control from the Blues database.

Delegates, Events, and Handlers

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Delegates are called by the HostControl class to inform the application of some type of event. Most delegates return the class as the first argument to identify the class that it came from and facilitate multiple concurrent VirtualHost instances. This may be used to identify the control in the case that the application has more than one control in the application.

Threading

Because the HostControl class uses the .NET Socket TCPIP class, it uses 2 threads for execution, the owners thread that constructed the VirtualHost class and a TCPIP thread to asynchronously send and receive information to the host computer. This means that when the VirtualHost fires an event back to the application, it may be on either thread. Depending on what the application wants to do, it may or may not have to switch to a safe thread. For example, A Windows Forms application wanting to display something inside an evtScreenChange event will have to switch to the main GUI thread before calling the .NET framework to display the information. This is because the .NET framework only allows painting the window in the main GUI thread. For more information on threading in .NET application, see the Microsoft web site for a number of technical documents.

It is important to call the HostControl.Close method when the application is done using the class so that the TCPIP conection can be closed and the trhead freed up. Failure to do this can cause exceptions to occur.

evtCloseWindowEvent

This delegate is fired when the operator selects the close window menu item. It informs the application to close the session window.

evtConnected

This delegate is fired when the terminal control connect attempt is complete. The ConnectedOk argument indicates the outcome of the connect attempt. If the connection attempt fails, the Message property contains the error string.

C#

```
Host.evtConnectComplete +=new
```

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```
HostControl.evtConnected(Host_evtConnectComplete);


.

.

.
/// <summary>
/// Connection attempt has completed
/// </summary>
/// <param name="Control"></param>
/// <param name="ConnectedOk"></param>
private void Host_evtConnectComplete(BluesTerminal Control, bool
ConnectedOk)
{


}
```

VB

```
AddHandler Host.evtConnectComplete, AddressOf Host_evtConnectComplete

.
.
.

Protected Sub Host_evtConnectComplete(ByVal Control As BluesTerminal,
ByVal Connected As Boolean)



End Sub
```

evtKeyboardUnlocked

This delegate is fired when the host application unlocks the keyboard. When a screen is sent to the host, the keyboard becomes locked until the host application unlocks it.

C#

```
Host.evtKeyboardUnlocked +=new
HostControl.BluesTerminal.evtevtKeyboardUnlocked(Host_evtKeyboardUnlocke
d);
```

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```
.

.

.

.
/// <summary>
/// Keyboard has been unlocked
/// </summary>
/// <param name="Control"></param>
private void Host_evtKeyboardUnlocked(HostControl.BluesTerminal Control)
{

}
```

VB

```
AddHandler Host.evtKeyboardUnlocked, AddressOf Host_evtKeyboardUnlocked
.

.

.
Protected Sub Host_evtKeyboardUnlocked(ByVal Control As
HostControl.BluesTerminal)


End Sub
```

evtLostConnection

This delegate is fired when the terminal session connection is lost or the operator selected to disconnect from the host.

C#

```
Host.evtDisconnected +=new
HostControl.evtLostConnection(Host_evtDisconnected);
.

.

.

.
/// <summary>
```

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```
/// Disconnect from host has occured
/// </summary>
/// <param name="Control"></param>
private void Host_evtDisconnected(BluesTerminal Control)
{


}
```

VB

```
AddHandler Host.evtDisconnected, AddressOf Host_evtDisconnected
.

.

.
Protected Sub Host_evtDisconnected(ByVal Control As BluesTerminal)

End Sub
```

evtMacroFunctionCompleteEvent

This delegate is fired when a macro record or play has completed.

evtMenuChangeEvent

This delegate is fired when the operator selects to either display or hide the application menu bar.

evtScreenChange

This delegate is fired when the host application has written to the session screen area. It informs the application that the screen has changed.

C#

```
Host.evtScreenChanged += new
HostControl.BluesTerminal.evtScreenChange(Host_evtScreenChanged);
```

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```
.

.

.
/// <summary>
/// Here the session screen has changed, retreive the screen contents
/// and parse the screen
/// </summary>
/// <param name="Control"></param>
private void Host_evtScreenChanged(HostControl.BluesTerminal Control)
{
      //
      // scrape screen and take appropriate action
      //
      string Screen = Host.getDisplayText(1,1,Host.ScreenRows *
Host.ScreenCols);

      //
      // ADD YOUR CODE HERE
      //
      // Parse screen, simulate keystrokes and wait for next screen
      //

}
```

VB

```
AddHandler Host.evtScreenChanged, AddressOf Host_evtScreenChanged
.

.

.
Protected Sub Host_evtScreenChanged(ByVal Control As
HostControl.BluesTerminal)

REM
REM scrape screen and take appropriate action
REM
Dim Screen As String
Screen = Host.getDisplayText(1, 1, Host.ScreenRows * Host.ScreenCols)

REM
REM add your code here to automate keyboard entry and wait for next
screen
REM

End Sub
```

evtSelectedCompleted

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This delegate is fired when the operator has finished highlighting part or all of the host session window. (Selected a portion of the screen)

C#

```
Host.evtSelectedCompleted += new HostControl.BluesTerminal.
evtSelectedCompleted (Host_ evtSelectedCompleted);
.

.

.
/// <summary>
/// Here the session screen has changed, retreive the screen contents
/// and parse the screen
/// </summary>
/// <param name="Control"></param>
private void Host_ evtSelectedCompleted(HostControl.BluesTerminal
Control)
{
      //
      // scrape screen and take appropriate action
      //
      string Screen = Host.getDisplayText(1,1,Host.ScreenRows *
Host.ScreenCols);

      //
      // ADD YOUR CODE HERE
      //
      // Parse screen, simulate keystrokes and wait for next screen
      //

}
```

VB

```
AddHandler Host. evtSelectedCompleted, AddressOf Host_
evtSelectedCompleted
.

.

.
Protected Sub Host_ evtSelectedCompleted (ByVal Control As
HostControl.BluesTerminal)

REM
REM scrape screen and take appropriate action
REM
```

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```
Dim Screen As String
Screen = Host.getDisplayText(1, 1, Host.ScreenRows * Host.ScreenCols)

REM
REM add your code here to automate keyboard entry and wait for next
screen
REM

End Sub
```

evtTerminalKeyPress

This delegate is fired when the operator or the application has pressed one of the terminal control keys such as ENTER, PF1, etc. The keycode argument will contain one of the KeyDefines enumeration values. KeyDefines is an emunerator in the enums.dll file.

evtTitleBarChangeEvent

This delegate is fired when the operator selects to either display or hide the application title bar.